DAVID Y. IGE
GOVERNOR

Testimony by:

JADE T. BUTAY
INTERIM DIRECTOR

Deputy Directors
ROY CATALANI
ROSS M. HIGASHI
EDWIN H. SNIFFEN
DARRELL T. YOUNG

IN REPLY REFER TO:

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

February 23, 2018
10:00 a.m.
State Capitol, Room 211
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LATE

S.B. 2910, S.D. 1
RELATING TO ELECTRIC GRID RESILIENCY.

Senate Committee on Ways and Means

The Department of Transportation (DOT) agrees that Hawaii must have infrastructure in place that can withstand natural disasters and emergencies.

The DOT **supports** this bill as a member of the homeland security and resiliency council to identify electric grid and other critical infrastructure needs and provide recommendations for enhancing grid and critical infrastructure resiliency throughout the State.

Thank you for the opportunity to provide testimony.

STATE OF HAWAII
DEPARTMENT OF DEFENSE
HAWAII EMERGENCY MANAGEMENT AGENCY

TESTIMONY ON SB 2910 SD1
RELATING TO ELECTRIC GRID RESILIENCY

LATE

Before the Senate Committee on
WAYS AND MEANS

BY

BRIGADIER GENERAL MOSES KAOIWI
Interim Administrator, Hawaii Emergency Management Agency (HI-EMA)

Chair Dela Cruz, Vice Chair Keith-Agaran and the members of the Committee:

The Hawaii Emergency Management Agency (HI-EMA) provides the following testimony *in support* of Senate Bill 2910 SD1 as long as it does not take away from the Governor's priorities specified in his executive budget.

Senate Bill 2910 SD1 establishes a homeland security and resiliency council to assess the resilience of the State's electrical grid and other critical infrastructure to withstand and recover from natural disasters and other emergencies and to make recommendations based on its assessments.

Energy resilience is a critical factor in the preparation for, response to, and recovery from any major disaster striking the state of Hawaii. Responding to energy shortfalls after a major disaster in Hawaii is greatly handicapped by our remote location in the Pacific. Restoring and sustaining energy requirements post disaster is a key to response and recovery. This was the case in our responses to Hurricane Iniki in 1992 and more recently Tropical Storm Iselle in 2014. Once sustained power was finally restored and distributed, the emergency was significantly reduced.

There is also an opportunity to coordinate and collaborate with the Critical Energy Infrastructure Interdependencies (CEII) Program which includes the Department of Energy, Department of Homeland Security, U. S. Pacific Command, and the State of Hawaii. The CEII Program is tasked to identify comprehensive and integrated critical risk assessment and mitigation approaches toward enhancing grid and critical infrastructure resilience throughout the State.

Thank you for the opportunity to SUPPORT Senate Bill 2910 SD1.

Moses Kaoiwi; moses.kaoiwi@hawaii.gov; 808-733-4300

LATE

Hawaii Solar Energy Association
Serving Hawaii Since 1977

TESTIMONY OF THE HAWAII SOLAR ENERGY ASSOCIATION
IN REGARD TO SB 2910 SD1, RELATING TO ELECTRIC GRID RESILIENCY
BEFORE THE
SENATE COMMITTEE ON WAYS AND MEANS
ON
FRIDAY, FEBRUARY 23, 2018

Chair Dela Cruz, Vice-Chair Keith-Agaran, and members of the committee, my name is Will Giese, and I represent the Hawaii Solar Energy Association, Inc. (HSEA)

HSEA **strongly supports** SB 2910 SD1. The measure amends establishes the grid resiliency capital investment program and the grid resiliency rebate program as well as a grid resiliency task force to prepare Hawaii's electrical grid for natural disasters and other emergencies.

The HSEA was founded in 1977 to further solar energy and related arts, sciences and technologies with concern for the ecologic, social and economic fabric of the Hawaiian Islands. Our membership includes the vast majority of locally owned and operated solar installers, contractors, distributors, manufacturers, and inspectors across all islands.

Grid resiliency and stability before, during, and after disasters is essential to providing residents of Hawaii a sense of security and the ability to quickly recover. Now more than ever electrical systems that build resiliency and stability into island electrical grids should be seriously considered as a path to energy independence by 2045.

As of last month, more than 30% of Puerto Ricans are without electricity.[1] **Puerto Rico is a wakeup call for Hawaii.** In the wake of Hurricane Maria, Puerto Rico released proposed rules on microgrid development and other grid resiliency efforts to strengthen its grid against extreme weather.[2] As a state we must decide if we are going to stand by and wait until a major disaster hits our islands or be proactive with intelligent and timely energy policy.

The 2015 Hawaii Catastrophic Hurricane Plan published by the Hawaii Emergency Management Agency paints a stark picture of the current state of Hawaii's electrical grid.[3] The report states:

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[1] Savransky, Rebecca. "Nearly Half a Million Customers Are Still without Power in Puerto Rico."*TheHill*, 25 Jan. 2018, thehill.com/blogs/blog-briefing-room/news/370744-nearly-half-a-million-customers-still-dont-have-power-in-puerto.

[2] Staff, PREC. *REGULATION ON MICROGRID DEVELOPMENT*. MI ed., CEPR, ser. 0001, 2018, *REGULATION ON MICROGRID DEVELOPMENT*.

[3] HI-EMA, Staff. *2015 Hawaii Catastrophic Hurricane Plan*. SOH-HI-EMA, 2015, *2015 Hawaii Catastrophic Hurricane Plan*.

> "A catastrophic hurricane will produce statewide power outages and disrupt all energy systems, resources, and markets. Much of Hawaii's electrical systems are located in inundation zones. Failure of this infrastructure will lead to major disruptions of production, transmission, and distribution of electricity. The power generation and distribution systems in Hawaii are subject to island-wide outages before, during, and after a catastrophic hurricane."[4]

Per this report, a ***best case*** scenario estimates 50% power outage for ***at least*** 30 days post-disaster (category 4 hurricane or stronger):[5]

Table 2-6: Critical Services Impacts

	Description	Summary of Impact
Critical Services	**Days without power** *Source: Hawaiian Electric Company*	50% of power generation lost for up to 30 days
	Days without water/sewer services *Source: 2013 State of Hawaii Mass Care Council*	7 days without service post-hurricane
	Days without seaport services *Source: 2013 State of Hawaii Mass Care Council*	7 days without basic/emergency service post-hurricane
	Days without airport services[12] *Source: 2013 State of Hawaii Mass Care Council*	3-5 days with no airport availability. Initially, only emergency operations via military transport. Estimate for restoration of commercial traffic was not available.
	Days required for debris clearance *Mass Care Working Group*	7 days for major roadways

It is essential that Hawaii be prepared for a major emergency or natural disaster. Through this bill, critical services like EMS, fire, and police as well as utility line workers and healthcare professionals would be given an extra layer of security in the event of a disaster. Hospitals and emergency shelters (primarily public schools) will be hardened against the impacts of a major emergency. Utility infrastructure will be made more resilient.

The state must act to treat grid resiliency efforts like those outlined in HB 2249 proactively, rather than symptomatically. Renewable energy, energy storage, microgrids, and grid resiliency efforts inherent in this bill build the critical infrastructure needed to safeguard the state against major disaster. This bill makes our state more secure, more resilient, and cleaner.

Put simply, this bill will save lives.

We **strongly support** SB 2910 SD1 and we urge this committee to pass this measure.

Thank you for the opportunity to testify.

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[4] See "Report" at pp. 109.
[5] See "Report" at Impacts, 2-6.

LATE

Before the Senate Committee on Ways and Means
Friday, February 23, 2018, 10 a.m.., Room 201
SB 2910 SD 1: Relating to Electric Grid Resiliency

Aloha Chair Dela Cruz, Vice Chair Keith-Agaran and members of the Committee,

On behalf of the Distributed Energy Resources Council of Hawaii ("DER Council"), I would like to testify in support of SB 2910 SD 1 which establishes a homeland security and resiliency council to assess the resilience of the State's electric grid and other critical infrastructure to natural disasters and other emergencies and make recommendations.

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 grid resiliency is seen as a crucial next step towards the development of an electrical grid which can respond to and withstand any emergency that may come our way. Even though Hawaii has made significant progress in the development of renewable energy, that renewable energy will not necessarily be enough to help Hawaii should we face a natural disaster or some other kind of emergency.

This bill would begin the process of assessing our state's resiliency and provide guidance on next steps. Hawaii is the most isolated island in the world, and we need to ensure that we can stand strong should we face a natural disaster or other emergency.

Thank you for the opportunity to testify.

Best regards,
Leslie Cole-Brooks
Executive Director
Distributed Energy Council of Hawaii

SIERRA CLUB OF HAWAIʻI
MĀLAMA I KA HONUA. Cherish the Earth.

LATE

SENATE COMMITTEE ON WAYS AND MEANS

Friday, February 23, 2018 10:00AM Conference Room 211

In SUPPORT of SB 2910 SD1 Relating to electric grid resiliency

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Aloha Chair Dela Cruz, Vice Chair Keith-Agaran, and members of the Committee,

On behalf of our 20,000 members and supporters, the Sierra Club of Hawaiʻi, a member of the Common Good Coalition, **strongly supports SB 2910 SD1**, to establish a homeland security and resiliency council to assess the resilience of the State's electric grid and other critical infrastructure to natural disasters and other emergencies and make recommendations

The electrical infrastructure of Hawaiʻi is severely vulnerable to major disaster. Currently, all of Hawaiʻi's major utility scale power generators sit within inundation zones across all islands. In the event of a major natural disaster, such as a category 4 hurricane or a tsunami, the majority of these generators would be rendered inoperable. This and other major vulnerabilities also extend to transformers, transmission systems, and distribution networks. The people of Hawaiʻi would be without power for days or weeks post disaster, and recovery would be slow and expensive.

SB 2910 SD1 creates a structure by which this system can be updated. By allowing the use of the Public Benefits Fee to create resiliency in the electric grid, our emergency shelters and hospitals,and residential homes, this measure seeks to safeguard the people of Hawai'i against major disaster. Additionally, many of these updates will utilize renewable energy which is in line with Hawaii's 2045 RPS goals, the power supply improvement plan, and grid modernization efforts. SB 2910 SD1 simultaneously creates reliability, grid stability, and clean power infrastructure.

Last year, Hurricane Irma and Maria devastated the country of Puerto Rico and its people, leaving thousands without power and creating massive environmental devastation. A similar fate awaits Hawaiʻi, unless this bill is passed. Major flooding in even one of our fuel oil burning power

plants could irreversibly destroy the vulnerable ecosystems surrounding them. A renewable power generator on a similar geographic footprint, such as wind turbines or ground-mounted solar, would have not even 1/100 of the environmental impact of an inundated traditional fossil fuel plant. Solar panels do not generate oil slicks or leak dangerous hydrocarbons into the water supply.

Hawai‘i, its people, and the environment need smart energy policies like SB 2910 SD1. The alternative to not passing this measure is terrifying and unacceptable.

We **strongly support SB 2910 SD1** and urge the committee to pass this measure.