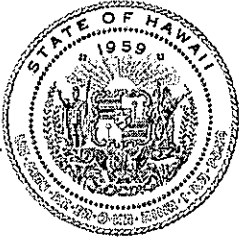


SB 2199

Measure Title: RELATING TO RENEWABLE ENERGY.

Report Title: Electric Vehicle Charging System Wiring; New Residential Single-Family Construction

Description: Prohibits issuance of building permits beginning 1/1/2016 for new residential single-family dwellings without wiring for electric vehicle charging systems that provide level two charging or 240-volt alternating current charging.



**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
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Statement of
RICHARD C. LIM
Director

Department of Business, Economic Development, and Tourism
before the

**SENATE COMMITTEES ON ENERGY AND ENVIRONMENT
ECONOMIC DEVELOPMENT, GOVERNMENT OPERATIONS AND HOUSING**

And
PUBLIC SAFETY, INTERGOVERNMENTAL AND MILITARY AFFAIRS

Thursday, February 20, 2014
2:45 PM

State Capitol, Conference Room 225

in consideration of
SB 2199
RELATING TO ELECTRIC VEHICLES.

Chairs Gabbard, Dela Cruz, and Espero; Vice Chairs Ruderman, Slom, and Baker; and Members of the Committees.


The Department of Business, Economic Development, and Tourism (DBEDT) supports the intent of SB 2199, which prohibits the issuance of building permits beginning January 1, 2016, for new residential single-family dwellings without wiring for Level Two electric vehicle (EV) charging systems or 240-volt alternating current charging.


The pre-wiring of a new single family home for an EV charging system is relatively inexpensive compared to the costs of retrofitting the property. Furthermore, pre-wiring would encourage residents of newly constructed homes to purchase and drive EVs which reduce consumption of gasoline and assist our efforts in achieving Hawaii's clean energy goals.


DBEDT recommends that SB 2199 be amended to grant the counties the discretion to waive this requirement when pre-wiring is not practical or feasible due to the lack of a garage, a carport or other design related barriers in newly constructed single family residences.

Thank you for the opportunity to offer these comments.



 | 808-733-7060

 | 1259 A'ala Street, Suite 300
Honolulu, HI 96817

 | 808-737-4977

February 20, 2014

The Honorable Mike Gabbard, Chair
Senate Committee on Energy and Environment

The Honorable Donovan M. Dela Cruz, Chair
Senate Committee on Economic Development, Government Operations and Housing

The Honorable Will Espero, Chair
Senate Committee on Public Safety, Intergovernmental and Military Affairs
State Capitol, Room 225
Honolulu, Hawaii 96813

RE: S.B. 2199, Relating to Renewable Energy

HEARING: Thursday, February 20, 2014 at 2:45 p.m.

Aloha Chair Gabbard, Chair Dela Cruz, Chair Espero, and Members of the Committees:

I am Myoung Oh, Government Affairs Director, here to testify on behalf of the Hawai'i Association of REALTORS® ("HAR"), the voice of real estate in Hawai'i, and its 8,300 members. HAR **opposes** S.B. 2199, which prohibits the issuance of building permits beginning January 1, 2016, for new residential single family dwellings without wiring for electric vehicle charging systems that provide level two charging or 240 volt alternating current charging.

HAR believes the state should stress incentives until Hawaii achieves greater consumer adoption of EVs and improvements are made in the state's EV charging infrastructure. While Palo Alto, California is the first in the country to require all new homes to be wired for EV charging stations, it's important to note that Silicon Valley (home of Tesla automobile) has more EV cars per capita than any other city in the country. Hawaii should strive for incentivized adoption of EVs rather than mandating charging station on new homes built.

Mahalo for the opportunity to testify.



BIA-HAWAII

BUILDING INDUSTRY ASSOCIATION

THE VOICE OF THE CONSTRUCTION INDUSTRY

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Homeworks Construction, Inc.

Michael Watanabe

JW, Inc.

Ryan Engle

Bays Lung Rose & Holma

Stephen Hanson

simplicityHR by ALTRES

TESTIMONY TO THE SENATE COMMITTEES ON ENERGY AND ENVIRONMENT, ECONOMIC DEVELOPMENT, GOVERNMENT OPERATIONS AND HOUSING, AND PUBLIC SAFETY, INTERGOVERNMENTAL AND MILITARY AFFAIRS

THURSDAY, FEBRUARY 20, 2014

2:45 P.M.

STATE CAPITOL - ROOM 225

RE: S.B. 2199, RELATING TO RENEWABLE ENERGY

Dear Chairs Gabbard, Dela Cruz, and Espero, Vice-Chairs Ruderman, Slom, and Baker, and members of the Committees:

My name is Gladys Marrone, Government Relations Director for the Building Industry Association of Hawaii (BIA-Hawaii), the Voice of the Construction Industry. We promote our members through advocacy and education, and provide community outreach programs to enhance the quality of life for the people of Hawaii. BIA-Hawaii is a not-for-profit professional trade organization chartered in 1955, and affiliated with the National Association of Home Builders.

BIA-Hawaii is **opposed** to S.B. 2199, which would prohibit the issuance of building permits beginning 1/1/2016 for new residential single-family dwellings without wiring for electric vehicle (EV) charging systems that provide level two charging or 240-volt alternating current charging.

Many of our developers already offer the option to homeowners for a conduit and an open spot in the electric box to add a circuit breaker. If a homeowner wants to have a charging station in their garage they would have to have the circuit breaker installed in the box, the wire installed in the conduit, and the plug apparatus specific to the automobile manufacturer.

However, S.B. 2199 would mandate the wiring for EV charging systems. Most EV chargers are running 30, 40 or 50 amps, and occasionally 100 amps. The cost to pre-wire a home for an EV charger includes the circuit and the wire to the future charging location. Since wire run is impossible to know ahead of time, \$600 - \$1,000 should be allowed for this cost. However, a 200 amp service is \$1,400 - \$1,800 more than a 100 amp service. This puts EV pre-wire costs at \$600 - \$2,800 per home.

Finally, if a homeowner decides that, 10 years after they move into their new home, they want, and are able, to purchase an EV, would the wiring still be usable with the future technology? Perhaps an incentive approach to attaining renewable energy goals should be considered.

We appreciate the opportunity to share with your our views.



AMERICANS FOR DEMOCRATIC ACTION

OFFICERS	DIRECTORS			MAILING ADDRESS
John Bickel, President	Guy Archer	Brien Hallett		PO. Box23404
Barbara Polk, Vice-President	Juliet Begley	Jan Lubin	George Simson	Honolulu
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Chuck Huxel, Secretary	Karin Gill	Jim Olson	Marsha Schweitzer (Alt)	

February 19, 2014

TO: Chairs Gabbard, Dela Cruz, and Espero
Members of the Committees on Energy and Environment, Economic
Development, Government Operations and Housing; and Public Safety, Intergovernmental and
Military Affairs

FROM: John Bickel, President
Americans for Democratic Action/Hawai'i

RE: Support and Comments on SB 2199 Relating to Renewable Energy

Americans for Democratic Action/Hawaii support SB 2199 to require new homes to be equipped with outlets capable of charging electric cars. While not all electricity is generated cleanly, more of it is than by gasoline engines. Therefore this bill proposes a step in the right direction for reducing carbon dioxide emissions.



**SENATE COMMITTEE ON ENERGY AND ENVIRONMENT
SENATE COMMITTEE ON ECONOMIC DEVELOPMENT, GOVERNMENT OPERATIONS
AND HOUSING
SENATE COMMITTEE ON PUBLIC SAFETY, INTERGOVERNMENTAL AND MILITARY
AFFAIRS**

February 20, 2014, 2:45 P.M.

Room 225

(Testimony is 3 pages long)

TESTIMONY IN SUPPORT OF SB 2199

Chairs Gabbard, Espero, and Dela Cruz; Vice Chairs Ruderman, Baker, and Slom; and Members of the Committees:

Blue Planet Foundation supports SB 2199, a measure that will facilitate and promote the use of electric vehicles. Electric vehicles play an integral role in Hawai'i's clean energy future by helping it meet its environmental and energy mandates. This proposed measure makes it easier for residents to replace conventional cars with electric vehicles. It also helps the state and all its residence save money by creating a more robust electric grid that helps to reduce our dependence on expensive imported fossil fuels.

Land transportation offers the most immediate opportunities for reducing fuel consumption.

Hawai'i's gasoline prices rose by more than 40% from 2006 to 2012. Hawai'i motorists paid \$2 billion for fuel in 2012 – a huge drain on the state's economy.

Transportation accounts for almost two-thirds of our fossil fuel consumption, making sustainable mobility solutions essential to moving Hawai'i beyond oil. The Hawai'i Clean Energy Initiative (HCEI) seeks to reduce Hawai'i's dependence on imported fossil fuels by achieving a goal of 70 percent clean energy by the year 2030. The overall goal for the transportation sector, therefore, is to reduce the consumption of petroleum in ground transportation by 70 percent or approximately 385 million gallons per year by 2030.¹

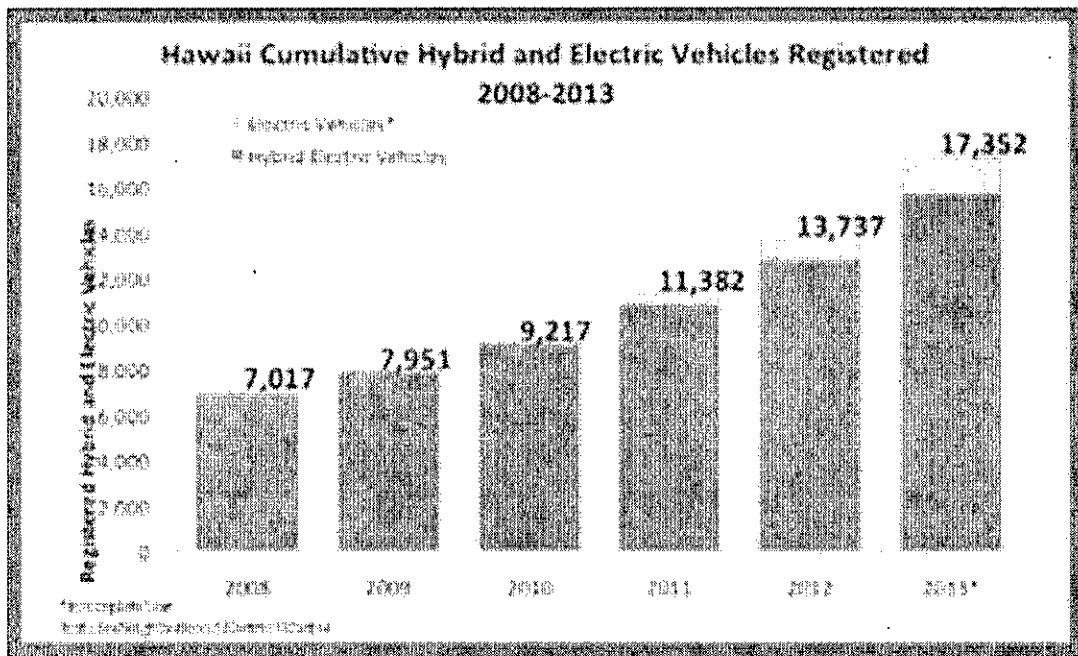
¹ Maui Electric Vehicle Alliance, *ELECTRIC VEHICLE PARADISE: How Hawai'i Can Lead the World in Deployment* (Sept. 2013), available at: http://www.law.berkeley.edu/files/ccelp/CLEE_UHMC_EV_Report_1.pdf

Electric vehicles will help this task by decreasing the amount of petroleum needed for transportation. Just as importantly, electric vehicles can simultaneously enable an increase in the amount of variable renewable energy, like wind and solar, that electric utilities can accommodate. A distributed network of vehicle batteries could be used to manage the flow of power and to store excess energy. Most vehicles can sit idle for more than 22 hours a day, so they can become de facto energy storage devices if their batteries are plugged into the grid when they are not in use. With smart grid infrastructure in place, electric vehicles can become an essential component to electricity load and clean energy resource balancing—in addition to providing sustainable mobility solutions for Hawai'i residents.

In Hawai'i, driving electric vehicles is a rising trend

In January 2014, the number of passenger electric vehicles in the state increased by 86 percent, as compared to the same month last year.

The chart below shows year-to-year growth through 2013.



Source: Monthly Energy Trends (Department of Business, Economic Development and Tourism), August 2013.

To keep this trend growing, Hawai'i's residents need to be sure that they can access the grid infrastructure necessary for electric vehicle charging.

Removing the #1 obstacle for electric vehicle-users

Nearly 87 percent of the electric vehicles owners expect to charge their vehicles in their home while they are parked in the garage for 10 to 12 hours in a day.²

A requirement that new single-family residential buildings must be pre-wired to accommodate electric vehicle charging stations during their construction is important. It prevents the inefficiency of forcing potential electric vehicle owners from having to pay up to thousands of dollars to redo wiring in a building that has already been constructed. Pre-wiring only costs up to \$200. But over the life of the home, the benefits to its residents and to the electric grid are far more valuable. Last year, the City of Palo Alto in California has adopted a similar mandate, requiring new homes to be constructed with the pre-wiring for Level two charger.

Many electric-vehicle makers partner with charging-station makers, and offer deals to get them installed in your home. Home improvement and electronics stores also sell Level two electric-vehicle chargers. Most electric vehicles or chargers have the ability to control the time that it charges. You can park the car, plug it in, but have the actual charging set for the middle of the night, when electricity rates can be lower. Every morning, your car will have a fully charged battery, with maximum range and ready to go.

A lack of charging stations remains a barrier for many wanting to purchase an electric vehicle. The majority of public stations are Level two chargers that operate at 220-240 volts and can charge electric vehicles in six to eight hours – this is probably longer than you would spend shopping or having lunch nearby. The 10-extra miles of range you get while plugged in at a public station might be just enough to combat range anxiety. Potential electric vehicle buyers will find comfort in knowing that recharging vehicles at home is a readily available option.

Pre-wiring for Level two chargers in new homes helps us meet future demand and addresses the range anxiety of electric vehicle users planning trips beyond commute distances, or the increasing congestion at charging stations.

Mahalo for the opportunity to testify.

² Maui Electric Vehicle Alliance, *ELECTRIC VEHICLE PARADISE: How Hawai'i Can Lead the World in Deployment* (Sept. 2013), available at: http://www.law.berkeley.edu/files/ccelp/CLEE_UHMC_EV_Report_1.pdf.



Chamber of Commerce HAWAII

The Voice of Business

**Testimony to the Senate Committee on Energy and Environment, and
Committee on Economic Development, Government Operations and Housing,
and Committee on Public Safety, Intergovernmental and Military Affairs
Thursday, February 20, 2014 at 2:45 P.M.
Conference Room 225, State Capitol**

RE: SENATE BILL 2199 RELATING TO RENEWABLE ENERGY

Dear Chairs Gabbard, Dela Cruz, and Espero, and Vice-Chairs Ruderman, Slom, and Baker, and members of the Committees:

The Chamber **opposes** S.B. 2199, which would prohibit the issuance of building permits beginning 1/1/2016 for new residential single-family dwellings without wiring for electric vehicle (EV) charging systems that provide level two charging or 240-volt alternating current charging.

The Chamber is the largest business organization in Hawaii, representing more than 1,000 businesses. Approximately 80% of our members are small businesses with less than 20 employees. As the "Voice of Business" in Hawaii, the organization works on behalf of its members, which employ more than 200,000 individuals, to improve the state's economic climate and to foster positive action on issues of common concern.

Many developers already offer the option (VOLUNTARY) to homeowners to install a conduit and an open spot in the electric box to add a circuit breaker. If a homeowner wants to have a charging station in their garage they would have to have the circuit breaker installed in the box, the wire installed in the conduit, and the plug apparatus specific to the automobile manufacturer.

S.B. 2199 would MANDATE the wiring for EV charging systems. Most EV chargers are running 30, 40 or 50 amps, and occasionally 100 amps. The cost to pre-wire a home for an EV charger includes the circuit and the wire to the future charging location. Since wire run is impossible to know ahead of time, \$600 - \$1,000 should be allowed for this cost. However, a 200 amp service is \$1,400 - \$1,800 more than a 100 amp service. This puts EV pre-wire costs at \$600 - \$2,800 per home.

The legislature should be aware that Hawaii already has one of the highest mean home prices in the United States (+/- \$685,000.00). Mandate of this nature, while appearing to encourage wider use of Electric Vehicles comes at a cost of increasing the overall cost to the home buyer. The Market Conditions should provide the incentives for people to switch to electric vehicles.

Thank you for the opportunity to express our views on this matter.



SIERRA CLUB OF HAWAII
MĀLAMA I KA HONUA. *Cherish the Earth.*

MALAMA I KA HONUA
Cherish the Earth

SENATE COMMITTEE ON ENERGY & ENVIRONMENT
SENATE COMMITTEE ON ECONOMIC DEVELOPMENT, GOVERNMENT OPERATIONS
AND HOUSING
SENATE COMMITTEE ON PUBLIC SAFETY, INTERGOVERNMENTAL AND MILITARY
AFFAIRS

February 20, 2014, 2:45 P.M.
(Testimony is 1 page long)

TESTIMONY IN SUPPORT OF SB 2199

Aloha Chair Gabbard, Dela Cruz, Espero and Members of the Committees:

The Sierra Club of Hawai'i, with over 12,000 dues paying members and supporters statewide, *supports* SB 2199. This measure prudently requires houses to be "electric vehicle ready" by ensuring new construction has the wiring necessary to install an EV charging station.

Hawai'i is an ideal location for electric vehicles. Most commutes are well within an EV's capacity, thus eliminating the need for a gas powered engine. Electric vehicles -- even assuming no improvements to our electric grid -- produce less carbon dioxide emissions than comparable gas powered cars. As Hawai'i begins to meet its renewable energy goals, electric vehicles could be a completely clean source of transportation. Moreover, electrical vehicles are silent, create no air pollution, and need little maintenance. No tune ups, oil changes, or radiator repairs are necessary (these items simply don't exist on an electrical car).

Nonetheless, electric vehicle adoption will not occur unless people can charge their vehicle at home. And if a homeowner has to spend significant amounts of money to install a charging station, it is likely they'll consider other vehicle options.

This is a commonsense measure that will result in little or no cost increases to the building design — it's merely ensuring wiring is available in the garage — but could save homeowners thousands of dollars of the lifetime of an electric vehicle.

Mahalo for the opportunity to testify.

SENATE COMMITTEE ON ENERGY AND ENVIRONMENT

and

**SENATE COMMITTEE ON ECONOMIC DEVELOPMENT, GOVERNMENT
OPERATIONS AND HOUSING**

and

**SENATE COMMITTEE ON PUBLIC SAFETY, INTERGOVERNMENTAL AND
MILITARY AFFAIRS**

February 20, 2014

Senate Bill 2199 Relating to Renewable Energy

Chair Gabbard, Chair Dela Cruz, Chair Espero, members of the Senate Committee on Energy and Environment, Senate Committee on Economic Development, Government Operations and Housing, and Senate Committee on Public Safety, Intergovernmental and Military Affairs, I am Rick Tsujimura, representing General Motors LLC (GM).

GM supports the intent of Senate Bill 2199 Relating to Renewable Energy. We request the attached amendments to this measure which would expand the reach of the bill, ensuring that a greater number of residential properties are EV-ready. More properties means greater adoption rates of EV vehicles. Greater adoption means fewer emissions.

We are suggesting the inclusion of both 120 as well as 240 chargers. 120 provides a slower, but readily available charging. 240 charges much faster.

This inclusion would be no more of a burden for contractors than wiring a laundry room for an electric dryer. It also provides contractors and owners options based on their expected usage.

Thank you for the opportunity to present this testimony.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. Chapter 196, Hawaii Revised Statutes, is amended by adding a new section to be appropriately designated and to read as follows:

"196 - Wiring for an electric vehicle charging system required for new single-family residential construction.

(a) Beginning January 1, 2016, no building permit shall be issued for a new single-family dwelling that does not include dedicated wiring having its own circuit for an electric vehicle charging system, as defined in section 196 - 7.5, that provides level one (120v) or level two (240v) charging, ~~or two hundred forty volt using alternating current.~~ charging.

(b) Nothing in this section shall preclude any county from establish in a procedures and standards required to implement this section."

(c) Wiring for an electric vehicle charging system required for new multi dwelling (apartment, condo, townhouse, etc.) unit construction.

Beginning January 1, 2016, no building permit shall be issued for a new multi dwelling unit that does not include dedicated wiring having its own circuit(s) for an electric vehicle charging system(s), as defined in section 196 - 7.5, that provides level one (120v) or level two (240v) charging or a combination of level one or two charging, using alternating current. It is required that the number of charging locations equal at least two percent of the total units in the building complex with a minimum of one charging location for construction with less than 50 units. (example: a 100 unit complex would be required to have two charging locations for electric vehicles)

(d) Nothing in this section shall preclude any county from establish in a procedures and standards required to implement this section."

SECTION 2. New statutory material is underscored.

SECTION 3. This Act shall take effect on July 1, 2014.



680 Iwilei Road, Suite 510
Honolulu, Hawai'i 96817
(808) 548-6811 • Fax (808) 548-2080

Harry A. Saunders
President

Testimony by Harry Saunders
President, Castle & Cooke Hawai'i
February 19, 2014

Senate Committees on
Energy and Environment
and
Economic Development, Government Operations and Housing
and
Public Safety, Intergovernmental and Military Affairs

February 20, 2014
2:45 p.m.
Conference Room 225

Opposed to:
SB 2199
MANDATING ELECTRIC VEHICLE CHARGING SYSTEMS FOR
ALL NEW SINGLE FAMILY HOMES

Chair Gabbard, Vice Chair Ruderman; Chair Dela Cruz, Vice Chair Slom; Chair Solomon, Vice Chair Galuteria; Chair Espero, Vice Chair Baker; and Members of the Senate Committees on Energy and Environment; Economic Development, Government Operations and Housing and Public Safety, Intergovernmental and Military Affairs.

I am Harry Saunders, President of Castle & Cooke Hawai'i. As a major homebuilder in Hawai'i, we are generally opposed to mandates that increase the cost of homes without recognition of consumer/buyer acceptance and needs. Our approach is to "build to the market;" to produce homes that meet market and buyer demands.

Our production homes are designed with many energy saving features and we also allow buyers to add options (at their costs) to implement other energy saving features that they want in their new homes and can afford. In this case, an electric vehicle charging station would be an option for an owner to consider if they are driving (or plan to have) an electric vehicle.

Mahalo for your consideration of my testimony. Should you have questions, please feel free to contact us:

Harry Saunders, President
Castle & Cooke Hawai'i
aktsukamoto@castlecooke.com
Phone: 548-4884

Bruce Barrett, Executive Vice President - Residential
Castle & Cooke Hawai'i
barrett@castlecooke.com
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Carleton Ching, Vice President -
Community and Government Relations
Castle & Cooke Hawai'i
cching@castlecooke.com
Phone: 548-3793

SB2199

Submitted on: 2/13/2014

Testimony for ENE/EGH/PSM on Feb 20, 2014 14:45PM in Conference Room 225

Submitted By	Organization	Testifier Position	Present at Hearing
Ed Wagner	Individual	Oppose	No

Comments: Members of the ENE/EGH/PSM Committees, SB2199 is a very short sighted bill that will increase the cost of a new home without providing any long term benefit because EV's are merely a short term bridge technology that will be overtaken by hydrogen cars within 5 years. Hydrogen is a byproduct of geothermal energy production. Hydrogen fuel-cell cars are coming to market in 2015 from 3 manufacturers. Honda is one of them. <http://automobiles.honda.com/honda-fcev> Bjorn Lomborg: Green Cars Have a Dirty Little Secret http://online.wsj.com/article/SB10001424127887324128504578346913994914472.html?mod=rss_opinion_main The above is an interesting article about EVs, including the Nissan Leaf. The article raises some interesting arguments against their use. Read and judge for yourself. I think Senator Gabbard is sorry that he purchased a Nissan Leaf. Here is his own response to my message about EV's and hydrogen cars. March 12, 2013 at 11:35 AM Aloha Ed... Yeah, food for thought. I'm thinking about my 2 year old LEAF sitting outside with 27K miles...and the battery depleting daily.....Good idea going hydrogen fuel-cell in 2015...my trade in value will probably be zero L....Have a great, safe journey. Keep me in the loop on any energy related issues. Senator Mike Gabbard Chair, Energy & Environment Committee Hawai'i State Capitol, Room 201 Honolulu, Hawai'i 96813 Ph: 586-6830 Fax: 586-6679

SB2199

Submitted on: 2/14/2014

Testimony for ENE/EGH/PSM on Feb 20, 2014 14:45PM in Conference Room 225

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

SB2199

Submitted on: 2/18/2014

Testimony for ENE/EGH/PSM on Feb 20, 2014 14:45PM in Conference Room 225

Submitted By	Organization	Testifier Position	Present at Hearing
Diane Brucato-Thomas	Individual	Oppose	No

Comments: Honorable Senators, This testimony is in opposition to SB2199. I have lived off-grid, in Puna, for well over 20 years, with a large solar system and back up generator. I am also fortunate to drive a hybrid car. In our district, many residents can barely afford a car held together by duct tape, let alone an electric car, and are most fortunate if they can afford to build a permitted house. To require additional wiring (and expense) for something they may never have the luxury to afford does not make sense. Unfortunately, this bill would serve to discourage people from seeking proper permits to build. Respectfully submitted, Diane Brucato-Thomas, RDH, EF, BS, FAADH

LETTER OF SUPPORT FOR SB 2199 RELATING TO RENEWABLE ENERGY
Prohibits issuance of building permits beginning 1/1/2016 for new residential single-family dwellings without wiring for electric vehicle charging systems that provide level two charging or 240-volt alternating current charging.

HEARING DATE:

DATE: Thursday, February 20, 2014

TIME: 2:45 p.m.

PLACE: Conference Room 225
State Capitol
415 South Beretania Street

February 19, 2014

To Senators Gabbard, Ruderman, Dela Cruz, Slom, Espero, and Baker

I write in support of the above bill. It is economic and practical to lay the conduits when a new construction is being built than to go back and do it later. This bill will welcome new EV adoption.

While directing the Maui Electric Vehicle Alliance, a project funded by the Department of Energy from October 1, 2011 to January 31, 2014, I spoke to electrical contractors who informed me that older constructions without sufficient electric panel or any conduit or wiring for 240-V are more expensive and time-consuming to change to accommodate the installation of LEVEL 2 charging stations.

I received my Ph.D. in Decision Science from London Business School (London University) in 1995 for my dissertation "Modeling Uncertainty in Electricity Capacity Planning," and subsequently worked in the energy sector in Houston and London. I also hold a Bachelor of Science in Engineering (B.S.E.) in Electrical Engineering, with a double major in Mathematics, from Duke University.

Yours Sincerely,

Anne Ku, PhD
<http://www.anneku.com>