SB 706

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Statement of
LUIS P. SALAVERIA
Director
Department of Business, Economic Development, and Tourism
before the
SENATE COMMITTEE ON ENERGY AND ENVIRONMENT
AND
SENATE COMMITTEE ON ECONOMIC DEVELOPMENT AND TECHNOLOGY

Thursday, February 19, 2015
2:50 p.m.
State Capitol, Conference Room 225

in consideration of
SB 706

RELATING TO RENEWABLE HYDROGEN.

Chairs Gabbard and Wakai, Vice Chairs Green and Slom, and Members of the Committees.

The Department of Business, Economic Development & Tourism (DBEDT) supports SB 706, which authorizes the issuance of general obligation bonds for the development of an electrolysis process hydrogen production, storage, and dispensing facility and appropriates funds into the hydrogen investment capital special fund under section 211F-5.7, Hawaii Revised Statues, for the operation of the facility. Provided it does not impact other areas of the executive biennium budget. Also, defer to B&F on the use of G.O. Bonds for this purpose.

While, DBEDT supports hydrogen for alternative renewable energy or fuel in furtherance of Hawaii's Renewable Portfolio Standards mandate and transportation goals, it defers to the Hawaii Strategic Development Corporation (HSDC) on the implementation and process. DBEDT's State Energy Office and HSDC recently hosted a Hydrogen Fuel Cell and Electric Battery Electric Vehicle Stakeholder Charrette on January 13-14, 2015, led by the International Council on Clean Transportation (ICCT). ICCT has been contracted, by DBEDT's State Energy Office to conduct a transportation energy analysis that includes analysis, recommendations, and

stakeholder engagement to support the development of a clean transportation plan under a revised Hawaii Clean Energy Initiative. The primary purpose of the Hydrogen Fuel Cell and Battery Electric Vehicle Stakeholder Charrette was to support the transportation energy analysis with regard to the feasibility of implementing electric-drive infrastructure across the State of Hawaii. The charrette explored the degree to which hydrogen fuel cell and plug-in EVs can contribute to reductions in petroleum-based fuels in the transportation sector.

ICCT is currently conducting their transportation energy analysis including the hydrogen fuel cell funding, policy, and challenges and solutions of large scale infrastructure deployment and vehicle adoption. Their preliminary charrette findings include the following: establishing a regulatory definition of hydrogen fuel cell electric vehicles (FCEVs) as electric-drive vehicles, providing incentives for early adopters to purchase FCEVs, encouraging commercial vehicle operators to replace diesels with FCEVs, standardizing codes and permitting to ensure safe operation of facilities, and supporting the development of economically viable fueling infrastructure.

DBEDT is currently in the process of extending an MOU between Hawaii and Okinawa for the next five years which could support a public private partnership to leverage federal grants and private investment to encourage the development of economically viable hydrogen fueling infrastructure.

Thank you for the opportunity to offer these comments in support of SB 706.

HSDC HAWAII STRATEGIC DEVELOPMENT CORPORATION

Written Statement of

KARL FOOKS
President
Hawaii Strategic Development Corporation

Before the
COMMITTEE ON ENERGY AND ENVIRONMENT

And the
COMMITTEE ON ECONOMIC DEVELOPMENT AND TECHNOLOGY

February 19, 2015
2:50 PM
State Capitol, Conference Room 225

In consideration of
SB 706 RELATING TO RENEWABLE HYDROGEN

Chair Gabbard, Chair Wakai, Members of the Committee on Energy and Environment and Members of the Committee on Economic Development and Technology:

The Hawaii Strategic Development Corporation (HSDC) respectfully submits testimony in support of SB 706, a measure providing funding for the development of an electrolysis process hydrogen production, storage and dispensing facility, and appropriating funds into the Hydrogen Investment Capital Special Fund.

However, if the proposed funding is for a specific project with well-defined requirements, HSDC recommends that the proposed funds should be allocated directly to the entity responsible for the project and avoid the administration requirements and HSDC Board oversight of the special fund.

The Hydrogen Investment Capital Special Fund was established to provide seed capital for venture capital investments in private sector and federal projects for research, development, testing, and implementation of the Hawaii renewable hydrogen program (as set forth in Section 196-10, HRS), and any other purposes deemed necessary to carry out the purposes of this program.

The Hydrogen Investment Capital Special Fund funded a recent Hydrogen Conference bringing in stakeholders from all over the State and nation to discuss strategies to increase the use of hydrogen fuel for transportation. This conference resulted in the introduction of SB 706 to appropriate funds for a hydrogen production and fueling station.

In order to properly administer the proposed program, HSDC proposes the following changes be made to portions of Section 211F, HRS.

§211F-5.7 ~~Hydrogen~~ Clean energy investment capital special fund. (a) There shall be established the ~~hydrogen~~ clean energy investment capital special fund, into which shall be deposited:

(1) Appropriations made by the legislature to the fund;
(2) All contributions from public or private partners;
(3) All interest earned on or accrued to moneys deposited in the special fund; and
(4) Any other moneys made available to the special fund from other sources.

(b) Moneys in the fund shall be expended by the corporation to:

(1) Provide seed capital for and venture capital investments in private sector and federal projects for research, development, testing, and implementation of the Hawaii renewable hydrogen program, as set forth in section 196-10; the Hawaii clean energy initiative as set forth in section 196-10.5; and
(2) For any other purpose deemed necessary to carry out the purposes of section 196-10 and section 196-10.5. [L 2006, c 240, §7; am L 2012, c 240, §4]

§211F-7 Actions of corporation; guidelines. (a) All actions taken by the corporation shall be necessary to achieve the purposes and objectives of this chapter. The corporation shall evaluate all programs after three years to determine their effectiveness. The corporation shall establish rules to assure equal opportunity to minority-owned businesses, and shall encourage the development of minority-owned businesses. The corporation shall support and encourage participation by Hawaii companies in federal grant programs, such as the Small Business Innovation Research Program.

(b) Financial participation shall be made on the condition that the recipient of the assistance shall utilize the money to assist economic development projects within the State that have potential for creating new jobs or retaining current jobs within the State.

(c) Financial participation by the corporation in private financial investment funds shall be made with the provision that the private fund shall make investments in Hawaii in amounts at least equal to the amount of state participation.

(d) The corporation shall not make direct investments in individual businesses except upon a two-thirds vote of the board in each case considered. When deciding whether to enter into a direct investment, the corporation shall consider whether:

(1) The project is economically sound;
(2) The project can be successfully completed;
(3) The project will promote economic diversification;

(4) The project is located in or will locate in the State and has a reasonable potential to create desirable employment opportunities for residents of the State;
(5) The project has been unable to obtain sufficient funding on reasonable terms through ordinary means; and
(6) The project can be partially financed through ordinary means at reasonable terms.

The corporation shall not acquire securities to an extent that would provide the corporation effective voting control of any enterprise after giving effect to the conversion of all outstanding convertible securities of the enterprise.

(e) ~~Investments~~ Financial participation by the corporation to persons shall be made on the basis of solicitation and a competitive technical review process, subject to the availability of funds allocated to the corporation for making investments. ~~Investments~~ Financial participation by the corporation shall not be subject to chapter 42F. Any organization applying for an investment shall meet the following standards:

(1) Have bylaws or policies that describe the manner in which business is conducted and policies relating to nepotism and management of potential conflict of interest situations;
(2) Be licensed and accredited, as applicable, in accordance with the requirements of federal, state, and county governments;
(3) Comply with applicable federal and state laws prohibiting discrimination against any person on the basis of race, color, national origin, religion, creed, sex, age, or physical handicap; and
(4) Comply with other requirements as the board may prescribe.

[L 1990, c 110, pt of §3; am L 1991, c 335, §5; am L 1997, c 190, §6]

COLLEGE OF SOCIAL SCIENCES
HAWAII ENERGY POLICY FORUM
UNIVERSITY OF HAWAI'I AT MĀNOA

Testimony of Mitch Ewan
Chair, Transportation Working Group
Hawaii Energy Policy Forum

Before the
Senate Committee on Energy and Environment and
Senate Committee Economic Development and Technology

Thursday, February 19, 2015 at 2:50pm in Conference Room 225

IN SUPPORT OF SB706 – Relating to Renewable Hydrogen

I am Mitch Ewan, Chair of the Transportation Working Group of the Hawaii Energy Policy Forum (Forum). The Forum, created in 2002, is comprised of over 40 representatives from Hawaii's electric utilities, oil and natural gas suppliers, environmental and community groups, renewable energy industry, and federal, state and local government, including representatives from the neighbor islands. Our vision and mission, and comprehensive "10 Point Action Plan" serves as a guide to move Hawaii toward its preferred energy goals and our support for this bill.

SB706 proposes to appropriate $3 million in General Obligation bonds for the build-out of hydrogen production and fueling infrastructure, and appropriates $1.8 million from general funds into the Hydrogen Investment Capital Special Fund for FY2015-2016, and $1.8 million from the fund for 2016-2017 for operations.

The Forum supports this measure that would install hydrogen infrastructure to support the operation of hydrogen fuel cell electric buses, utility vehicles such as fuel cell electric trucks, and the first fleets of fuel cell electric cars which are on there way to Hawaii. This will also send an important message to federal funding agencies such as the US Department of Energy that Hawaii is willing to invest in a hydrogen future to reduce the importation of fossil fuels and in so doing leverage federal funding to support our hydrogen infrastructure. At this early stage of development, it is highly appropriate that government be a critical investment partner to support our local car industry. Please see HADA testimony to see the importance of this to one of our major industries.

The Forum supports SB706 and respectfully urges passage of the bill.

Thank you for the opportunity to testify.

This testimony reflects the position of the Forum as a whole and not necessarily of the individual Forum members or their companies

Hawaii Automobile Dealers' Association

Bill van den Hurk, President
Dave Rolf, Executive Director

HADA testimony in SUPPORT of
SB706

RELATING TO RENEWABLE HYDROGEN

Presented to the Senate Committee on Energy and Environment and the
Senate Committee on Economic Development and Technology
2:50 p.m. Thursday, February 19, 2015
in Conference Room 225, Hawaii State Capitol

by the Members of the Hawaii Automobile Dealers Association
Hawaii's franchised new car dealers

Chairs Gabbard and Wakai, Vice Chairs Green and Slom, and Members of the Committees:

I am David Rolf, representing the members of the Hawaii Automobile Dealers Association, Hawaii's franchised new car dealers, who have remained strong in their support of the transition to renewable clean energy for use in vehicles in Hawaii. The association supports the measured and considered transition to renewable fuel and hydrogen fuel cell electric vehicles.

The association is in support of SB706 which proposes to appropriate $3 million in General Obligation bonds for the build-out of a hydrogen production and fueling facility, and appropriates $1.8 million from general funds into the Hydrogen Investment Capital Special Fund for FY 2015-2016, and $1.8 million from the fund for 2016-2017 for operations.

HADA participated with 50 or so stakeholders' in the recent DBEDT-hosted charrettte (working group meeting) relating to hydrogen fuel cell electric vehicles and electric vehicles held at the U.S. Emigration Building, located next to Ft. Armstrong, here in Honolulu, in January. Our testimony in support of this bill is based on the conclusions our association reached from our participation in those meetings, the input from the many stakeholders, and on the U.S. Dept. of Energy study relating to the feasibility of the Ft. Armstrong site.

The 1.4-acre Ft. Armstrong site seems ideal for this hydrogen production-fueling operation. It's centrally located in downtown Honolulu—across from the federal building, just a few blocks from State offices, and close to City and County offices and the bus facility.

These government fleet vehicles would have convenient access to the $13 per kilogram hydrogen—produced on this site, as well as providing access to the small fleet of private owner hydrogen vehicles that will be taking to the roadways 2015-2017 as international auto manufacture roll-outs of these vehicles proceed.

The manufacturer roll-outs will occur, of course, if there is some availability and needed redundancy in hydrogen fueling stations and easy access for the early adopters, both government fleets and private users.

The 50-page study done through the U.S. Dept of Energy on the feasibility of the Ft. Armstrong site shows the cost to build the site and the economics of operating it. With most of the users of the hydrogen in the first years consisting of government fleet vehicles—transitioned to this clean, renewable fuel.

The study forms a foundation for the creation of a State of Hawaii RFP soliciting private companies to submit bids to build and operate the facility for 2 years.

The RFP would include provisions for a long-term lease of the federal property--and any bidder would need to have contracts for the provision of hydrogen fuel for some federal, state, or local government fleet operators, and perhaps some private fleet operators.

With build-out and operating costs covered, the profit from the enterprise, it seems would come from the success in signing long-term contracts with fleet users of the hydrogen produced and dispensed.

Of course, for hydrogen to be competitive, on a cost per mile traveled comparison, with $2-$3 per gallon gasoline, the cost of hydrogen will need to come down to the $4-$6 per kilogram range.

Gasoline will likely stay in the $2-$3 range for many years, perhaps another 5 years, at least.

Producing and dispensing a mass-produced clean energy fuel like hydrogen at a cost similar to the cost of a fossil fuel like gasoline—on a cost per vehicle mile traveled comparison-- is the goal of this R&D endeavor.

Such R&D is expected to cost more at the outset as full commercialization develops.

The winning bidder in this clean-energy-for-transportation sector, will need to provide equipment and operations that lower the cost of production of five-nines hydrogen (99.999% pure, or closely approaching this level) and compression to 10,000 psi, along with storage and dispensing, down to a level equal to the import and dispensing of gasoline--on a cost-per-vehicle-mile comparison—in order to, at some point, produce a reasonable return on investment for the hydrogen station operators and investors.

The RFP for the project, will need to bear this in mind, in the creation of the request.

Some companies, of course, may consider this R&D simply part of a long-term investment and treat it as such.

Federal, State, and City and County hydrogen fuel cell electric vehicles will be needed for the important role of providing early users for hydrogen fuel production and fueling stations which must be built to allow for the roll-out of such vehicles.

Hawaii will see the arrival of the Toyota Mirai (Japanese for "the future") next month.

The U.S. Department of Energy has made California, Hawaii, and an East Coast corridor near Boston, the focus for their effort Fuels Cell Program. The following is an excerpt from their recently published study on the feasibility of Ft. Armstrong.

U.S. Department of Energy Hydrogen & Fuel Cells Program Plan (September 2011) identifies the use of hydrogen for government and fleet electric vehicles as a key step for achieving "reduced greenhouse gas emissions; reduced oil consumption; expanded use of renewable power …; highly efficient energy conversion; fuel flexibility…; reduced air pollution; and highly reliable grid support." This report synthesizes several pieces of existing information that can inform a decision regarding the viability of deploying a hydrogen (H_2) fueling station at the Fort Armstrong (HI0013zz) site in Honolulu, Hawaii. The hydrogen fueling station will be publicly accessible and used to fuel light-duty vehicles, including both General Services Administration fleet and non-General Services Administration fleet vehicles, and other fuel cell transportation technologies that are being deployed in the Honolulu area (such as fuel cell buses and plug-in paratransit buses).

> The envisioned facility would consist of a premium covered parking lot, a roof-mounted photovoltaic solar array, and a small H_2 production and distribution station similar to other established H_2 fueling stations in California. A 1.4–acre, roof-mounted photovoltaic solar field that produces about 700 kW of power per day can sustain an electrolyzer that is capable of producing roughly 65 kg of H_2 per day without being overly dependent on the electric grid. The intent is to tie the photovoltaic solar array to the electrical grid and to one or more nearby third-party electricity consumers (i.e., most likely a co-located Federal Building) and effectively use the third-party consumer and the grid as an energy storage device. All required equipment is commercially available and can be easily procured and installed within a lead time of one calendar year.
>
> With a 65-kg per day electrolyzer and an average demand of 80% utilization, the H_2 refueling station could support roughly 85 to 100 vehicles. About 148 government-owned electrical and gas-powered "cars" located near the proposed H_2 fueling station could easily be transitioned to H_2 fuel cell-powered vehicles. Another 293 sport utility vehicles and light-duty trucks are also candidates for transition and fueling station use, as well as a large fleet of public transportation vehicles such as busses. This makes the Fort Armstrong (HI0013zz) site very attractive.

This facility is intended to be a flagship-type installation, setting the example and establishing a renewable H_2 infrastructure in Hawaii for other government and private entities to follow. It is assumed that GSA would not own and operate the station but rather enter into a lease agreement with an entity to own and maintain the fueling station. The objective is to establish an H_2 production concept that can be replicated at other sites throughout the islands to produce affordable H_2 at a price comparable to fossil fuels and in a way that the consumer cost of H_2 per kg will not vary from station to station.

In accordance with the information and analysis contained herein, to produce an initial rate of return of 4% on the H_2 fueling station, the cost at which H_2 must be sold to recuperate capital expenditures and operations and maintenance costs, following the sale of excess solar-based power and the revenue received for covered parking, is $13.00 per kg. In this analysis, it was assumed that a single kilogram of H_2 can power an H_2 fuel cell vehicle for ~60 miles, which is a conservative effort. Considering that gasoline-powered vehicles average

approximately 24 miles per gallon in fuel economy, a single kg of H_2 is equivalent to more than two gallons of gasoline when fuel cell energy efficiency is considered.

Beyond the economic factors, an H_2 fueling station in Honolulu, Hawaii, offers the following important benefits:

1. Supports the President's clean energy strategy to reduce greenhouse gas emission, reduce dependence on foreign oil, and place 1 million electric vehicles on the road
2. Supports both the Hawaii H_2 Initiative (H_2I) and H_2USA, the public, private partnership launched by DOE and industry in 2013 to address the challenge of H_2 infrastructure
3. Establishes Federal/General Services Administration leadership in the zero emission vehicle and fuel cell electric vehicle arena
4. Permits the leasing of fuel cell electric vehicles by General Services Administration on Oahu
5. Informs potential stakeholders that H_2 fueling stations are real and encourages the appropriation and allocation of funds for other zero emission vehicles beyond just battery electric vehicles
6. Fort Armstrong (HI0013zz) becomes the 'anchor tenant' for fuel cell vehicle growth and catalyzes development of the Oahu infrastructure toward an initial rollout of six public H_2 fueling stations
7. Sends a serious message to fuel cell electric vehicle automakers to support the growing demand for zero emission vehicles/fuel cell electric vehicles in Hawaii.

This report was funded by GSA and the Energy Departments' Office of Energy Efficiency and Renewable Energy (EERE) and prepared by engineers from the Idaho National Laboratory and National Renewable Energy Laboratory, and reviewed by experts from industry, gas providers and the utility company in HI. The effort was coordinated between EERE's Fuel Cell Technologies Office and Federal Energy Management Program. It is recommended that the program proceed with pursuing the detailed design and implementation of an H_2 fueling station at the Fort Armstrong (HI0013zz) site in Honolulu, Hawaii.

HADA has testified on several bills this session heard on hydrogen….which we referred to as "the signal" bills.

Such "signal" bills, if passed, will send a signal from the State of Hawaii to:

1) GSA to move forward. With the 1.4 acre Ft. Armstrong hydrogen fueling station helping to facilitate the lease or purchase of HFCEVs for the GSA fleet in Honolulu

2) DAGS to move forward with their inventory of State vehicles and the move toward HFCEVs

3) County officials across the state and City and County officials here in Honolulu to adopt HFCEVs

4) Worldwide automakers to open up the Hawaii HFCEV market by providing help with infrastructure and providing vehicles

5) Those attending the Sept. 1-10, 2016 World Conservation Congress here in Hawaii—the largest conservation event in the world—that Hawaii is leading in the transition to renewable fuels.

So far, no "signals" have been sent from Hawaii legislative action. Last year all the hydrogen bills failed to pass. Last year, all the money from the barrel tax, which was renewed, was diverted to the General Fund, or other places, mainly funding cleanup projects, not funding hydrogen fueling stations or HFCEV vehicle acquisitions by State fleets.

As mentioned, the Servco organization is bringing in the first hydrogen fuel cell electric vehicle—this year.

That company will likely create their own hydrogen fueling station.

But redundancy is needed for the successful introduction of HFCEVs

As hydrogen fuel production comes online, it is possible that hydrogen produced from fossil fuel sources such as that produced by HawaiiGAS at their SNG plant also could be used to provide an effective bridge as the renewables become more cost effective. Hydrogen would be produced using existing excess HawaiGAS capacity, go through gas cleanup to bring it to 99.999% purity, and then trucked to dispensing sites in Hydrogen Transport Trailers. It could also be used in conjunction with electrolysis at Fort Armstrong to make up the difference between electrolysis production and demand. Costs to install this option would be additional.

Finally, we note that while the focus of our testimony has been on Ft. Armstrong, this model for building a hydrogen production facility and fueling station would work for a number of different sites.

We respectfully ask that the committees pass SB706 to provide the needed infrastructure funding for a flagship hydrogen production and fueling station. The passage of the bill will provide a clear signal that Hawaii is preparing well and welcomes the roll-outs of hydrogen fuel cell electric vehicles which are a key part of a clean energy future.

Respectfully submitted,
David H. Rolf
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SERVCO
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Servco Pacific Inc. testimony in SUPPORT of
SB706
Related to Renewable Hydrogen

Presented to the Senate Committee on Energy and Environment and the Senate Committee on Economic Development and Technology at the public hearing to be held on Thursday, February 19, 2015 at 2:50 p.m. in Conference Room 225, Hawaii State Capitol

Aloha Chairs Gabbard, Wakai and Vice Chairs Green and Slom, and Members of the Committee:

Servco Pacific Inc. supports funding the installation of a publicly accessible hydrogen refueling station which meets the manufacturer's requirements for refueling hydrogen fuel cell vehicles.

A Hydrogen Fuel Cell Vehicle (HFCV) is an electric vehicle which uses fuel cell technology to convert hydrogen and oxygen into electricity to power one or more onboard electric motors. Fuel cell technology is not new. Its principle was demonstrated in the 1800s and used by NASA in the 1960s in the Gemini and Apollo space missions.

Toyota started its fuel cell vehicle development in 1992 and demonstrated its first fuel cell vehicle at a parade in Osaka, Japan in 1996. The 2016 model year Toyota Mirai, which launched in Japan as a production vehicle in late 2014, has a driving range of up to 300 miles, refueling time of about 5 minutes and the driving experience and performance similar to gasoline engine vehicles. Hydrogen fuel cell vehicles provide Zero Vehicle Emissions with minimal compromise and lifestyle change.

While SB706 directly encourages the renewable production of hydrogen and storage and dispensing, its significance goes far beyond just refueling vehicles. SB706 is a bold statement and catalyst demonstrating a commitment to Environmental Stewardship, Energy Independence and Economic Development. The benefits are well documented in several State, Federal and private reports. Some highlights include:

- Reducing our carbon footprint
- Reduced reliance on overseas shipping, availability and cost of fossil fuel, providing energy security
- Providing opportunities for new jobs in hydrogen production, distribution, dispensing and related technology and infrastructure
- Highlighting Hawaii as a leader in alternative and renewable energy

SERVCO

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In 1919, Servco Pacific Inc. started as a two-car garage in Haleiwa, Oahu. We have had the privilege of serving Hawaii for over 95 years with dedicated employees and a commitment to the community. Currently, for North America, Toyota is only planning to introduce the Mirai in California. Servco is making a very significant, independent financial commitment to encourage and facilitate the introduction of the Toyota Mirai in Hawaii. Servco is investing in more technical training, special service tools, facility upgrades, and internal refueling capability far exceeding any previous vehicles we have launched. For Servco, the decision is NOT economic; it is because it is the right thing to do for the community and the environment.

Passing SB706 will not only start to address our energy and environmental needs but also demonstrate that Government, Manufacturers and local businesses can work together to impact positive change and make a difference for current and future generations of Hawaii.