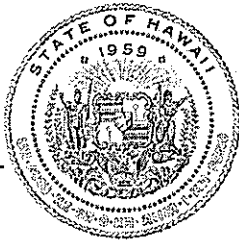


HB 450, HD1

**RELATING TO HYDROGEN FUELING
STATIONS.**

**Requires DBEDT to establish a hydrogen
fueling station demonstration project in
qualifying counties. Effective January 1,
2050. (HB450 HD1)**



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

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NEIL ABERCROMBIE
GOVERNOR

RICHARD C. LIM
DIRECTOR

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DEPUTY DIRECTOR

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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 AND
ECONOMIC DEVELOPMENT, GOVERNMENT OPERATIONS AND HOUSING**

Tuesday, March 19, 2013
3:00 p.m.
State Capitol, Conference Room 225

in consideration of
HB 450, HD1

RELATING TO HYDROGEN FUELING STATIONS.

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

The Department of Business, Economic Development & Tourism (DBEDT) provides comments on HB 450, HD1, which directs DBEDT to establish hydrogen (H₂) fueling station demonstration projects in each county with at least 170,000 residents, funded and operated through public and private partnerships, over a five year period. Based on the resident criteria, this measure applies to Honolulu and Hawaii County and intends to leverage renewable energy sources to produce H₂ and dispense it through H₂ fueling station technology.

DBEDT currently does not have the necessary resources to implement these projects.

Furthermore, the U.S. Air Force and the State of Hawaii are already partnered in similar H₂ demonstration projects at Joint Base Pearl Harbor-Hickam and in Hawaii County. The Hawaii Center for Advanced Transportation Technologies and the Hawaii Natural Energy Institute are appropriately taking the lead on behalf of State on these projects. Accordingly, we respectfully defer to the Hawaii Center for Advanced Transportation Technologies and the Hawaii Natural Energy Institute on the substantive merits of HB 450, HD1 and the resources necessary to carry out such an endeavor.

Thank you for the opportunity to offer these comments on HB 450, HD1.



COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAII AT MĀNOA

Hawaii Energy Policy Forum

me Schultz Afuvai, Hawai'i Institute for Public Affairs
bie Alm, Hawaiian Electric Co.
/ Asselbayer, Office of US Congresswoman Pulsi Gabbard
Boivin, Hawai'i Gas
ren Bollmeier, Hawaii Renewable Energy Alliance
rt Chee, Chevron
. Denny Coffman, Hawai'i State House of Representatives
abeth Cole, The Kohala Center
ie Cole-Brooks, Hawai'i Solar Energy Assn
: Datta, Ulupono Initiative
ra Dierenfield, Queen Lili'uokalani Trust
h Ewan, UH Hawai'i Natural Energy Institute
Fidell, ThinkTech Hawai'i, Inc.
. Freedman, Haiku Design & Analysis
. Mike Gabbard, Hawai'i State Senate
k Glick, State Energy Office, DBEDT
in Gruenstein, City & County of Honolulu
: Hahn, Office of Senator Brian Schatz
hael Hammett, Research Corporation of the UH
ert Harris, Sierra Club
Jam Kaneko, Hawaii Institute for Public Affairs
Kelly, Kaua'i Island Utility Cooperative
ren Kimura, Energy Industries Holdings
y King, Sustainable Biodiesel Alliance
representative Chris Lee, Hawai'i State House of Representatives
lys Marrone, Building Industry Assn of Hawai'i
g McLeod, Maui County
hen Meder, UH Center for Smart Building and Community Design
ren Montez-Hernandez, Office of Senator
vazle Hirono
mina Morita, Public Utilities Commission
ron Moriawaki, UH Social Sciences Public Policy Center
Nelson, U.S. Defense Energy Support Center
O'Connell, U.S. Department of Agriculture, Rural Development
ey Ono, Division of Consumer Advocacy, OCCA
tehn K. T. Park, Office of Congresswoman Colleen Hanabusa
issa Pavlicek, Hawaii Public Policy Advocates, LLC
: Rocheleau, UH Hawai'i Natural Energy Institute
. Rolston, Hawai'i County
r Rosegg, Hawaiian Electric Co.
y Saito, SunPower Systems Corp
le Simonpietri, U.S. Pacific Command Energy Office
ay Starling, Hawaii Energy
Jinn Sue, Hawaii Government Employees Assn
Sullivan, Kaua'i County
ce Tanaka, Tesoro Hawai'i Corp
ia Tome, State Energy Office, DBEDT

Testimony of Warren Bollmeier
Chair, Renewable Energy Working Group
Hawaii Energy Policy Forum

Senate Committees on Energy & Environment and on
Economic Development, Government Operations & Housing
Tuesday, March 19, 2013, 3:00 p.m., Conference Room 225

SUPPORT THE INTENT OF HB 450 HD1 – Relating to Hydrogen Fueling Stations

I am Warren Bollmeier, Chair of the Renewable Energy Working Group of the Hawaii Energy Policy Forum (Forum). The Forum, created in 2002, is comprised of 45 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" are designed to move Hawaii toward its preferred energy goals.

HB 450, HD1 proposes to establish a public/private hydrogen fueling station demonstration project. This proposal comes at a critical time as we enter a transformational period. We are witnessing an unprecedented shift toward more fuel-efficient automotive technologies that also utilize increasingly diverse energy resources. While standing at this intersection, we can either choose to take deliberate action to improve Hawaii's future or to do nothing and let this opportunity pass. The State has already made an excellent start with its support of the Hawaii Hydrogen Fund. HB450, HD1 represents a significant next step that will help Hawaii on its journey toward a sustainable energy future.

Similar to our publicly-funded network of interstate and state highway systems, government should take the lead to fund the roll-out of critical infrastructure to support a broad range of hydrogen transportation applications, ranging from public buses to privately owned cars and light trucks. The vehicle manufacturers will supply the cars, trucks, and buses if the initial fueling infrastructure is provided. As the number of deployed vehicles reaches a critical mass and demonstrates a profitable business case, private industry will take over and make the additional infrastructure investments. However, we are not there yet.

It is suggested that the first fueling stations target public transportation fleets such as buses and county vehicles where taxpayer investment in a fueling station will serve all taxpayers rather than a few early adopters who can afford hydrogen cars. However, as demonstrated at the AC Transit bus facility in Emeryville California, provision should be made for the early adopters to fuel at public facilities by adding a drive-through hydrogen fueling dispenser. HB450, HD1 will extend the current successful use of hydrogen fuels beyond existing military base installations to benefit our civilian community. By deliberately establishing strategic hydrogen infrastructure investments, Hawaii will be much better positioned to unlock its own renewable energy resources and provide another source for energy self-sufficiency.

The Forum finds, however, that the bill is too restrictive and excludes from participation smaller counties with populations less than 170,000. For example, Maui County Mayor Arakawa has indicated interest yet Maui County would be excluded. We, therefore, respectfully request the bill be amended to be open to all counties, specifically replacing the language at lines 3-5 on page 1, Section 1(a): "...project in [counties with a population of not less than one hundred seventy thousand residents] any county." The Forum respectfully urges passage of the bill with the above amendment. Thank you for the opportunity to testify.

The position of the Forum as a whole and not necessarily of the individual Forum members or their companies or organizations.

HB450

Submitted on: 3/18/2013

Testimony for ENE/EGH on Mar 19, 2013 15:00PM in Conference Room 225

Submitted By	Organization	Testifier Position	Present at Hearing
Doug McLeod	Maui County-Mayor's Office	Comments Only	No

Comments: We ask that the definition of qualifying County be expanded to include Counties with a population of at least 150,000. This would allow for demonstration projects in Maui County.



Hawaii Automobile Dealers' Association

Mike Niethammer, President
Dave Rolf, Executive Director

HADA testimony in STRONG SUPPORT of HB 450, HD1 Relating to Hydrogen Fueling Stations

Presented to the Senate Committee on Energy and Environment and the Senate Committee on Economic Development, Government Operations and Housing
At the joint-committee hearing to be held
3:00 p.m. Tuesday, March 19, 2013
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 Dela Cruz, Vice Chairs Ruderman and Slom, and Members of the Committees:

No longer twenty or thirty years away, mass-production of hydrogen fuel cell vehicles is on the near horizon, with some vehicles available as early as 2015 according to a Toyota projection. Other auto manufacturers plan to roll out their vehicles shortly thereafter in 2017.

In our association's continuing support of the State's clean energy goals, HADA offers the association's STRONG SUPPORT of HB 450, HD1—a bill which proposes that the State provide funding to help establish a hydrogen fueling station demonstration project in Hawaii.

HADA applauds legislative leaders for consideration of this measure which will allow the new vehicles and the new fueling facilities to arrive on relatively the same time line in Hawaii—creating a chicken and the egg concomitant rollout of hydrogen fuel cell product and the hydrogen fueling stations.

A February 4, 2013 *Automotive News* story by David Sedgwick and Gabe Nelson reports that “the biggest barrier to the technology may be the lack of fuel stations.”

HB 450, HD1 which you are considering, seeks to remove this barrier for Hawaii.

The *Automotive News* story adds that “each hydrogen station costs \$1 million to \$1.5 million to build.” (Source: Catherine Dunwoody, California Fuel Cell Partnership).

--continued next page--

Continuing our quote from the *Automotive News* story :

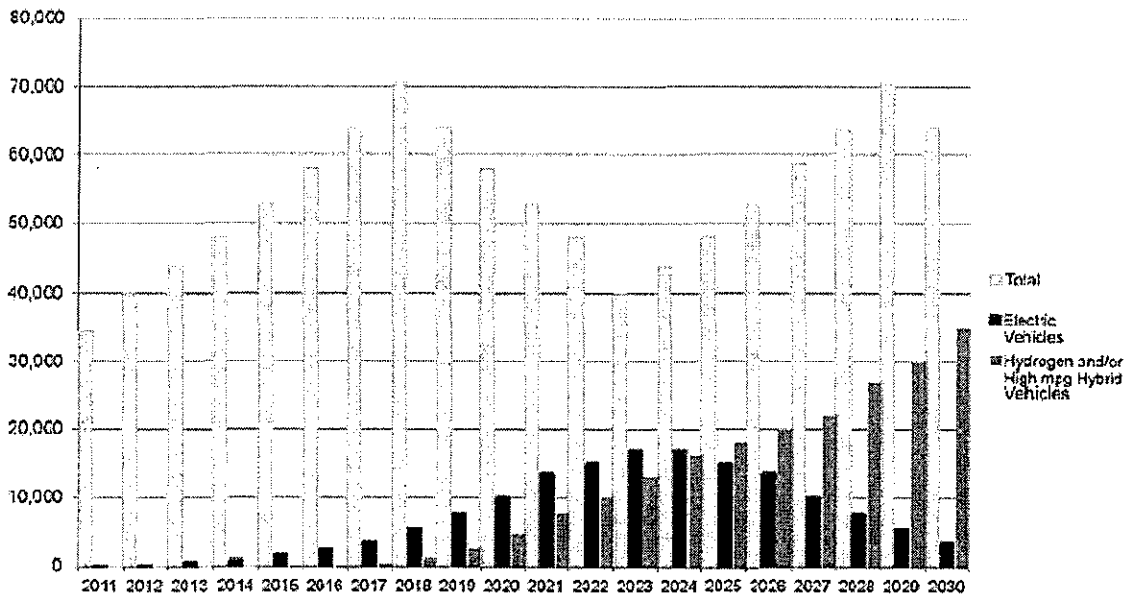
- “...(California’s) energy commission has earmarked \$28.6 million for new facilities.
- Toyota and BMW last month announced a fuel cell production alliance, and last week Daimler, Ford, and Nissan said they would join to develop a line of affordable fuel cell cars for sale as early as 2017.
- ‘We can’t deploy them (HFC vehicles) to consumers unless they have a place to refuel,’ said Steve Ellis, Honda’s U.S. Manager of sales and marketing for fuel cell vehicles.”

(Source: *Automotive News* “Fired up for fuel cells,” Feb. 4, 2013)

HADA developed the following uptake rate of renewable fuel vehicles which is needed to meet the goals of the Hawaii Clean Energy Initiative.

Electric /Hydrogen Vehicle Adoption Rate 2011-2030

Needed to meet goals of Hawaii Clean Energy Initiative

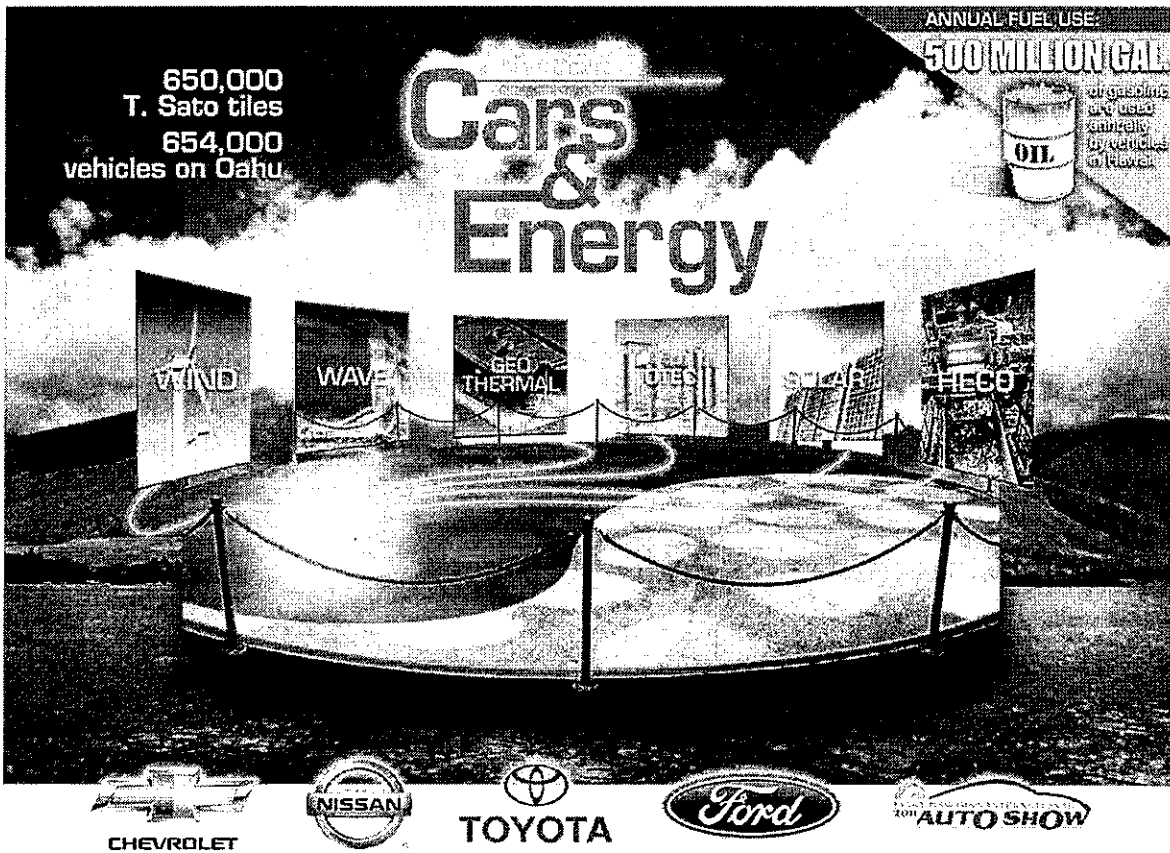


Source: HADA—Note: Blue (EV) and — (hydrogen fuel cell or high mpg hybrids) bars show projected component composition in total.

The hydrogen fuel cell car can be considered to be part what is known as the electrification of the car – a transformation to renewable energy that is taking place in the retail auto industry.

The electrolysis process -- utilizing Hawaii's abundant renewable energy resources—separates hydrogen from its oxygen molecule to create hydrogen gas. In the fuel cell vehicle the hydrogen is reunited with oxygen creating an electric current that powers a car's electric motor, with the by-product being H₂O from the tailpipe.

HADA produced the following chart to show how use of Hawaii's abundant renewable energy resources in vehicles, along with fuel-efficiency in gas vehicles, can reduce fossil fuel usage on Hawaii's roadways. Thereby draining the 500-million-gallon oil barrel, representing the state's annual fossil fuel usage in transportation, to 150 million gallons a year, in a little under 20 years.



HADA respectfully asks the committee to pass HB450, HD1.

Respectfully submitted,
David H. Rolf, on behalf of the members of the Hawaii Automobile Dealers Association.
PH: 808 593-0031 Email: drolf@hawaiiidealer.com

Written Statement of
YUKA NAGASHIMA
Executive Director & CEO
High Technology Development Corporation
before the
SENATE COMMITTEES ON ENERGY AND ENVIRONMENT
AND
ECONOMIC DEVELOPMENT, GOVERNMENT OPERATIONS AND HOUSING
Tuesday, March 19, 2013
3:00 PM
State Capitol, Conference Room 225
In consideration of

HB 450 HD1 RELATING TO HYDROGEN FUELING STATIONS.

Chairs Gabbard and Dela Cruz, Vice Chairs Ruderman and Slom, and Members of the Committees on Energy and Environment and Economic Development, Government Operations and Housing.

The High Technology Development Corporation (HTDC) respectfully offers comments on HB 450 HD1 relating to hydrogen fueling stations.

HTDC manages the Hawaii Center for Advanced Transportation Technologies (HCATT) which organizes public/private partnerships between the federal government and private industry to develop advanced low- and zero-emission vehicles centered on electric drive technologies.

In short, our state already has (1) a demonstration project for hydrogen fuel station, and (2) entity and a program that can handle any related projects in hydrogen fuel or in renewable energies. HTDC's HCATT is poised to consider any new vehicular technologies **given sufficient funding**. HCATT and HTDC's funding streams are such that we are unable to take on any unfunded mandates.

In 2001 HCATT formed a partnership with the Air Force Advanced Power Technology Office (APTO) and established the National Demonstration Center for Alternative Fuel Vehicles at Joint Base Pearl Harbor-Hickam (JBPHH) in Honolulu. In 2009 at the JBPHH HCATT installed a 146kW photovoltaic array providing the capability to produce up to 12kg/day of renewable hydrogen. The facility has consistently made improvements and has advanced current production capability to 68kg/day - enough hydrogen to refuel a fleet of 26 passenger vehicles currently in demonstration on Oahu. Further details on the hydrogen fueling station and other HCATT hydrogen projects may be found on the HCATT website www.htdc.org/hcatt.

Concerning the bill's 5 year plan:

(source: <http://www.fuelcelltoday.com/about-fuel-cells/applications/transport>)

“Fuel cell [Light Duty Vehicles] LDVs have so far seen limited use but this is set to change as most major automakers have targeted 2015 for initial commercial sales of their fuel cell vehicles. Initial locations for this rollout will most likely concentrate around clusters of early hydrogen refueling infrastructure in Japan, Germany and the USA, and will then spread outwards from these centers as the market is established.

The fuel cell bus sector is showing year-on-year growth, with more prototypes being unveiled. Successful deployments have taken place in Europe, Japan, Canada and the USA but the high capital cost is still a barrier to widespread adoption. However, it is hoped that soon after 2014 fuel cell bus prices will be comparable to diesel-hybrid bus prices.

'Niche' transport consists of a number of sub-applications with differing levels of commercial success to date. Materials handling vehicles account for over 90% of niche transport shipments, with [Proton Exchange Membrane Fuel Cell] PEMFC technology dominating. This market has seen much success in the USA so far. Unmanned aerial vehicles (UAVs), e-bikes and trains amongst others are still under development with limited deployments to date”

Concerning the fuel cell bus sector:

General Motors, in cooperation with HCATT has applied for a National Fuel Cell Bus grant from the USDOT. The Hydrogen bus, if Honolulu is selected, is projected to arrive for operation in late 2014.

Hydrogen fuel projects are costly, and therefore, often funded at the federal level, especially by the US Dept. of Defense (DoD). In order for the State to take on the responsibilities directed by this bill, HTDC **estimates the TOTAL cost (station infrastructure, hydrogen generation, construction, etc.) per project site to be in the order of \$4M.**

Given the pressure to reduce research and development budget at the federal level as well as DoD spending, HTDC is already expecting a deduction in our federal funding level to support its existing hydrogen fuel cell program, HCATT. Should a smaller amount be available for this type of initiative, we highly recommend that the monies be concentrated to entities who already have the expert knowledge base, necessary community networks and the internal agency structure optimized for hydrogen fuel cell technologies, such as HTDC's HCATT program.

Thank you for this opportunity to provide comments on HB450 HD1.

**SENATE COMMITTEE ON
ENERGY AND ENVIRONMENT**

and

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

March 19, 2013

House Bill 450, HD1 Relating to Hydrogen Fueling Stations

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

General Motors (GM) would like to express strong support for House Bill 450, HD1, which is intended to establish a hydrogen fueling station demonstration project. This proposal comes at a critical time, as we enter a transformational period. We are witnessing an unprecedented shift toward more fuel efficient automotive technologies that also utilize increasingly diverse energy resources. While standing at this intersection, we can either choose now to take deliberate action to improve Hawaii's future, or we can let this opportunity pass, doing nothing to improve the situation. The State made an excellent start down this pathway with its support of the Hawaii Hydrogen Fund. We believe House Bill 450, HD1 represents a significant next step that will help Hawaii on its journey toward a sustainable energy future.

House Bill 450, HD1 can help establish Hawaii as a sustainable energy leader, transforming Hawaii's energy ecosystem into a model for other governments around the globe. Hawaii captured the attention and support of the Federal Government and various global industries. Other countries like Germany, Korea, Japan, and the Scandinavian countries are attempting to address similar problems. The solutions that Hawaii successfully develops and demonstrates today will become proven concepts and best practices for other states and countries around the globe.

Hydrogen represents a crucial link for diversifying Hawaii's energy infrastructure. It will help unlock alternative energy solutions for Hawaii's residents and can ultimately free Hawaii from its dependence on imported fossil fuels. Hydrogen represents an "energy currency" that can capture available renewable energy resources, store energy for extended time periods, load-shift to efficiently match supply and demand, and provide a conduit between the energy complex, the electrical grid, and the transportation sector. In 2010 GM, Hawaii Gas, and ten other government, academic, and industrial partners formed the Hawaii Hydrogen Initiative (H2I). This group is chartered with the single purpose of identifying and implementing hydrogen solutions that satisfy Hawaii's Clean Energy Initiative. GM, the U.S. Department of Energy, the National Renewable Energy Laboratory (NREL), The Hawaii Natural Energy Institute (HNEI), and the University of California at Irvine conducted a two year computer modeling effort to quantify the effectiveness of hydrogen as a component to Hawaii's energy ecosystem. This study confirmed that hydrogen and fuel cell technology can be implemented economically, with the goal of displacing large quantities of fossil fuel imports and utilizing Hawaii's renewable energy resources for vehicle propulsion.

GM initiated Defense Department partnerships to deploy Hawaii's first Hydrogen Fuel Cell Electric Vehicle (FCEV) fleet. In 2011, sixteen (16) Chevrolet Equinox Hydrogen Fuel Cell Electric Vehicles were deployed. These vehicles are now operating daily on Oahu and are contributing important data to GM's more than 2.6 MILLION miles of accumulated fleet operation. GM established one low-capacity refueling station at its Fuel Cell Vehicle Service Center at 515 Kamakee Street, Honolulu. The Defense Department is completing installation of hydrogen refueling stations at Joint Base Pearl Harbor, Hickam and the Schofield Barracks and Kaneohe Marine Corps Base.

Unfortunately, these stations are only accessible by military vehicle users. Future efforts must expand hydrogen fuel availability beyond the boundaries of military bases, so other users can experience this important technology and current users can achieve unencumbered use of the vehicle fleet. Ideally, future stations should be integrated into more comprehensive energy infrastructure plans that span across energy and transportation sectors; plans that incorporate renewable energy resources, stationary power, grid back-up and distributed power generation needs, while at the same time providing effective hydrogen refueling access for light duty and commercial vehicles. This can add new opportunities for Hawaii to:

- leverage additional wind energy with improved flexibility to stabilize the grid,
- maximize new wind energy investments by avoiding wind energy curtailment,
- integrate landfill and waste water gas recovery efforts to provide viable transportation fuels,
- introduce clean hydrogen fuel cell bus options for mass transportation,
- integrate distributed power generation systems for added grid security,
- drive new investments into Hawaii, where stakeholders can concentrate technology demonstrations within one region (Hawaii) & create synergies to maximize likelihood of achieving positive results,
- deploy clean hydrogen fuel cell powered forklifts and aircraft tugs into crucial markets where economics can already support these technologies, and
- create new Hawaii jobs by shifting Hawaii's energy complex from its reliance on imported fossil fuels to localized renewable energy production with substantial value added from within the state.

These opportunities and their ability to help address Hawaii's energy challenges are why we believe House Bill 450, HD1 is important to Hawaii's future. If passed into law, House Bill 450, HD1 will extend the reach of hydrogen fuels beyond existing military base installations and into civilian applications. It means Hawaii will be taking its energy future into its own hands. By deliberately establishing strategic hydrogen infrastructure investments, Hawaii will be much better positioned to unlock its own renewable energy resources. We are willing to work with you to answer your questions about these promising technologies and how they may be used to solve Hawaii's energy challenges.

Thank you for the opportunity to present this testimony.

HB450

Submitted on: 3/15/2013

Testimony for ENE/EGH on Mar 19, 2013 15:00PM in Conference Room 225

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

Comments: Since current EV technology is just a bridge technology to the ultimate hydrogen fuel cell vehicles of the future, it would be wise to ramp up hydrogen fuel station technology, especially since we can produce hydrogen as part of geothermal energy production. Water is the ONLY product of hydrogen fuel cell combustion. The environmental benefit of current EV technology is questionable at best.
http://online.wsj.com/article/SB10001424127887324128504578346913994914472.html?mod=rss_opinion_main Honda has been testing hydrogen fuel cars in CA, and plans to introduce such a car to the market in 2015. Other manufacturers are developing similar cars for market. I personally will not buy an EV for reasons stated in the WSJ article above. I think of current EV vehicles as those running on a bunch of Everready Bunny batteries. I will lease a fuel efficient Honda Accord and then my ultimate car, the Honda hydrogen fuel cell car.

HB450

Submitted on: 3/17/2013

Testimony for ENE/EGH on Mar 19, 2013 15:00PM in Conference Room 225

Submitted By	Organization	Testifier Position	Present at Hearing
Rosemary Aldridge	Individual	Oppose	No

Comments: I wish to thank the Senate Committees on Energy & Environment and Economic Development, Government Operations & Housing for the opportunity to testify on HB450. I oppose HB450 because a hydrogen fueling station demonstration project lasting 5 years on Oahu is waste of taxpayer money as I see no practical application for this technology on a Statewide basis any time in the near or or even long term future. I can see no way that production of explosive hydrogen gas, compression, liquification, storage and transport will be acceptable to state residents. Nor will it be likely that importation will be accepted. There is already resistance from some State agencies and politicians to importing liquefied natural gas to Hawaii. This is simply another example of wasting taxpayer money - how much can't be ascertained as the amount of appropriation has been left blank in this bill.

HB450

Submitted on: 3/17/2013

Testimony for ENE/EGH on Mar 19, 2013 15:00PM in Conference Room 225

Submitted By	Organization	Testifier Position	Present at Hearing
Lee Aldridge	Individual	Oppose	No

Comments: I wish to thank the Senate Committees on Energy & Environment and Economic Development, Government Operations & Housing for the opportunity to testify on HB450. I OPPOSE HB450. I oppose this bill because a hydrogen fueling station demonstration project lasting 5 years on Oahu is waste of taxpayer money as I see no practical application for this technology on a Statewide basis any time in the near or or even long term future. I can see no way that production of explosive hydrogen gas, compression, liquification, storage and transport will be acceptable to state residents. Nor will it be likely that importation will be accepted. There is already resistance from some State agencies and politicians to importing liquefied natural gas to Hawaii. This is simply another example of wasting taxpayer money - how much can't be ascertained as the amount of appropriation has been left blank in this bill.

HB450

Submitted on: 3/17/2013

Testimony for ENE/EGH on Mar 19, 2013 15:00PM in Conference Room 225

Submitted By	Organization	Testifier Position	Present at Hearing
Valerie Sisneros	Individual	Oppose	No

Comments: Expensive, unnecessary, absolutely no good reason to implement this bill. Please OPPOSE this bill. Thank you.