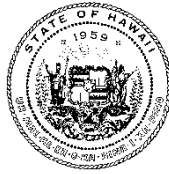


DAVID Y. IGE
GOVERNOR



SARAH ALLEN
ADMINISTRATOR
BONNIE KAHAKUI
ASSISTANT ADMINISTRATOR

**STATE OF HAWAII
STATE PROCUREMENT OFFICE**

P.O. Box 119
Honolulu, Hawaii 96810-0119
Tel: (808) 586-0554
email: state.procurement.office@hawaii.gov
<http://spo.hawaii.gov>
Twitter: [@hawaiispo](https://twitter.com/hawaiispo)

TESTIMONY
OF
SARAH ALLEN, ADMINISTRATOR
STATE PROCUREMENT OFFICE

TO THE HOUSE COMMITTEE
ON
FINANCE
February 21, 2020, 12:00PM

HB 2699, HD2
RELATING TO THE ENVIRONMENT

Chair Luke, Vice Chair Cullen and members of the committee, thank you for the opportunity to submit testimony on HB 2699, HD2. The State Procurement Office (SPO) appreciates the intent of the bill, and offers the following comments and recommendations:

COMMENT: Section 2, Page 2, Lines 18-20, and Page 3, Lines 1-14 creates a new section within the procurement code that includes statements that are duplicative to HRS 103D-412, with the exception of a few words, which may be confusing to government buyers.

RECOMMENDATION: The following changes to Chapter 103D-412 to read as follows:

§103D-412 Light duty and other motor vehicle requirements. (a) the procurement policy for all agencies purchasing or leasing light- medium- and heavy-duty motor vehicles shall be to seek vehicles that reduce dependence on petroleum-based fuels that meet the needs of the agency where feasible and cost-effective.

(b) Beginning XXXXJanuary 1, 2010, all state and county entities, when purchasing new vehicles, shall seek vehicles with reduced dependence on petroleum-based fuels that meet the needs of the agency priority for selecting vehicles shall be as follows:

- (1) Electric or plug-in hybrid electric vehicles and fuel electric vehicles;
- (2) Other alternative fuel vehicles;
- (3) Hybrid electric vehicles; and

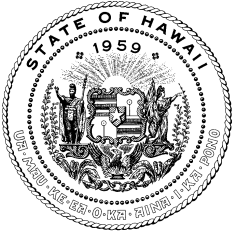
- (4) Vehicles that are identified by the United States Environmental Protection Agency in its annual “Fuel Economy Leaders” report as being among the top performers for fuel economy in their class.

- (5) Vehicles shall not be larger than necessary for their intended functions.

CONCERN: Subject-specific specifications should be included in the subject-specific HRS Chapter. The Code is meant for general procurement methods, and high-level. It should not be a receptacle for all industry-specific specifications as this will, over time, create a vast, and complicated Code that will confuse buyers because if they will not be able to trust that specifications are in the respective chapter and procurement specific requirements are lost within the sea of specifications.

RECOMMENDATION: Remove Section 5, page 4, lines 14 to 20, page 5 in its entirety, and page 6 lines, 1 to 9 to Section 196-9, Hawaii Revised Statutes on Energy Efficiency and Environmental Standards for State Facilities, Motor Vehicles and Transportation Fuel.

Thank you.



HAWAII STATE ENERGY OFFICE

STATE OF HAWAII

235 South Beretania Street, 5TH Floor, Honolulu, HI 96813 | energy.hawaii.gov

DAVID Y. IGE
GOVERNOR

SCOTT J. GLENN
CHIEF ENERGY OFFICER

(808) 587-3807

Testimony of
SCOTT J. GLENN, Chief Energy Officer

before the
HOUSE COMMITTEE ON FINANCE
Friday, February 21, 2020
12:00 PM
State Capitol, Conference Room 308

In SUPPORT of
HB 2699, HD2
RELATING TO THE ENVIRONMENT.

Chair Luke, Vice Chair Cullen, and Members of the Committee, the Hawaii State Energy Office (HSEO) supports and offers comments on HB 2699, HD2, which establishes clean ground transportation goals for state agencies on a staggered basis until one-hundred percent of light-duty vehicles of each fleet are powered by renewable sources by December 31, 2035, and for all light-duty vehicles in the State to be one hundred percent powered by renewable sources by December 31, 2045. Hawaii Revised Statutes (HRS) §225P-5 establishes a statewide target to sequester more atmospheric carbon and greenhouse gases (GHG) than emitted within the State as quickly as practicable, but no later than 2045. In 2016, emissions from transportation activities in Hawaii were 8.69 million metric tons CO₂ equivalent, accounting for 51 percent of Energy sector emissions. Ground transportation accounted for 47 percent of those transportation emissions. The objective of transitioning all light-duty vehicles to be powered by renewable resources will aid in eliminating a significant portion of Hawaii's GHG emissions from the ground transportation sector.

HRS §196-71 (b)(2) directs the HSEO to lead efforts to incorporate energy efficiency, renewable energy, energy resiliency, and clean transportation to reduce costs and achieve clean energy goals across all public facilities. Consistent with HRS §196-71 (b)(2) the HSEO will support agencies in their efforts to fulfill the direction of HB 2699, HD2, to convert all light duty ground transportation vehicles to be powered by renewable sources by 2035, as well as transitioning medium- and heavy-duty vehicles to renewable sources as alternatives become feasible and cost-effective.

HRS §196-71 (b)(3) directs the HSEO to provide renewable energy, energy efficiency, energy resiliency, and clean transportation project deployment facilitation to assist private sector project completion when aligned with state energy goals. Additionally, HRS §226-18 provides

direction that planning for the State's facility systems with regard to energy shall be directed toward the achievement of increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawaii's dependence on imported fuels for electrical generation and ground transportation.

Both HRS §196-71(b)(3) and HRS §226-18 support the direction provided in HB 2699, HD2, for the HSEO and Department of Transportation (DOT) strategies to transition all light-duty vehicles, public and private, in the State to meet the clean ground transportation goal of being one hundred percent powered by renewable sources by December 31, 2045.

The HSEO would like to provide comments that, rather than insert specific milestones in statute at this time, the HSEO will work with DOT and stakeholders on establishing appropriate milestones consistent with these goals to ensure that the transition is efficient from both an operational and budgetary perspective, accounting for existing fleets and facilities. In particular, such milestones could result from other bills the Legislature is considering that would require HSEO to undertake a statewide transportation plan.

The HSEO defers to state agencies on procurement and budget considerations related to achieving the clean ground transportation goals.

Thank you for the opportunity to testify on this bill.



STATE OF HAWAII
HAWAII CLIMATE CHANGE MITIGATION & ADAPTATION
COMMISSION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

Testimony of
Anukriti Hittle
Coordinator, Hawaii Climate Change Mitigation and Adaptation Commission

Before the House Committee on
FINANCE

Friday, February 21, 2020
12:00 PM
State Capitol, Conference Room 308

In support of
HOUSE BILL 2699, HOUSE DRAFT 2
RELATING TO THE ENVIRONMENT

House Bill 2699, House Draft 2 establishes clean ground transportation goals for state agencies on a staggered basis until achieving a 100 per cent light-duty vehicle clean fleet by 12/31/2035, and for all light-duty vehicles in the State by 12/31/2045. **On behalf of the Hawaii Climate Change Mitigation and Adaptation Commission (Commission) I support this measure.**

The Hawaii Climate Change Mitigation and Adaptation Commission “recognizes the urgency of climate threats and the need to act quickly. It promotes ambitious, climate-neutral, culturally responsible strategies for climate change adaptation and mitigation in a manner that is clean, equitable and resilient.” The Commission, established by Act 32 SLH 2017 to uphold the United States’ pledges under the Paris Agreement, is the coordinating body for policies on climate change mitigation and adaptation for the state. It is a high-level multi-jurisdictional body that guides the priorities of the state’s climate response. Co-chaired by DLNR and Office of Planning, it consists of 20 members—chairs of four legislative committees, and executive department heads at the county and state levels.

Transportation (air and ground) is the single largest source of greenhouse gas emissions in Hawaii, which mirrors the trend nationwide (according to EPA, it was the largest source of GHG emissions in 2017). One of the two focuses of the Commission is to reduce emissions from ground transportation, and HB2699 is a crucial component of this effort. The Commission’s statement on ground transportation, issued in November 2018, “supports mechanisms to reduce overall vehicle miles travelled (VMT) as well as converting all remaining vehicle-based ground transportation to renewable, zero-emission fuels and technologies.” It specifically urges the state to:

Co-Chairs:
Chair, DLNR
Director, Office of Planning

Commissioners:
Chair, Senate AEN
Chair, Senate WTL
Chair, House EEP
Chair, House WTH
Chairperson, HTA
Chairperson, DOA
CEO, OHA
Chairperson, DHHL
Director, DBEDT
Director, DOT
Director, DOH
Chairperson, DOE
Director, C+C DPP
Director, Maui DP
Director, Hawai'i DP
Director, Kaua'i DP
The Adjutant General
Manager, CZM

“Transform State and county fleets to address VMT reduction, congestion, and emissions—especially through electrification, renewable fuels, carshare, and supporting infrastructure development and deployment.”

House Bill 2699 House Draft 2 makes the case that electrification of light duty vehicles will have the added benefits of cost savings and energy independence for Hawaii. Several jurisdictions have taken advantage of tax credits, aggregated procurement, and other mechanisms to convert their public fleets in a cost effective manner.^{1 2} In addition, at the 2020 Statewide Climate Change Conference held this month, researcher Katherine McKenzie, Hawaii Natural Energy Institute, emphasized the declining cost of electric vehicles and that “over the life of the vehicle however it may be already more cost effective to own and operate an EV, depending on the model and use, because of the low maintenance and fueling costs. In addition, low electricity rates are available from Hawaiian Electric Companies during daylight hours.”^{3 4}

Thank you for the opportunity to testify on this measure.

¹A case study of three all-electric vehicle procurements conducted by the US Navy, City of New Bedford, MA, and City of Seattle, WA. EV Smart Fleets. June 2017.

²Capturing the federal EV Tax Credit for Public Fleets: A case study of a multi-jurisdictional electric vehicle fleet procurement in Alameda County, California. EV Smart Fleets. April 2017

³ “Where 3 Million Electric Vehicle Batteries Will Go When They Retire”, Bloomberg Business Week, June 2018.

⁴“Electric Vehicle Lifecycle Cost Assessment for Hawaii”, Makena Coffman, University of Hawaii Economic Research Organization, for Hawaii Natural Energy Institute, Electric Vehicle Transportation Center study, September 2015.



Email: communications@ulupono.com

HOUSE COMMITTEE ON FINANCE
Friday, February 21, 2020 — 12:00 p.m. — Room 308

Ulupono Initiative Supports HB 2699 HD 2, Relating to the Environment.

Dear Chair Luke and Members of the Committee:

My name is Amy Hennessey, and I am the Senior Vice President of Communications & External Affairs at Ulupono Initiative. We are a Hawai'i-based impact investment firm that strives to improve our community's quality of life by creating more locally produced food; increasing affordable clean renewable energy and transportation options; and better managing waste and fresh water resources.

Ulupono supports HB 2699 HD 2, which establishes clean ground transportation goals for state agencies on a staggered basis until achieving a 100% light-duty vehicle clean fleet by 12/31/2035, and for all light-duty vehicles in the State by 12/31/2045.

Ulupono supports energy efficiency measures to lower consumption across the State. Electric vehicles (EVs) are an important avenue to address Hawai'i's pressing climate issues and align with the State's energy and environmental goals. Ground transportation makes up a significant portion of Hawai'i's reliance on imported oil and the largest contributor to our State's greenhouse gas emissions. EVs currently offer an effective option to progress clean renewable ground transportation and provide immediate benefits to Hawai'i.

We applaud legislators for pushing the State to lead by example and welcome the urgency to purchase zero emission vehicles, such as EVs, and setting a goal for the entire State fleet to be clean and electric. Not only will this help move the State's environmental, health and energy goals, but it will also signal to the market that Hawai'i demands EVs while creating a more robust EV market in the State, particularly as State vehicles enter the used car market. This market signal is critical positioning to help ensure suppliers prioritize clean vehicles for Hawai'i, particularly since the State is unable to join California and others via an EV mandate. However, it is important that this policy still be fiscally prudent so that agencies continue to optimize full utilization of the fleet and replace vehicles as they near the end of their useful life.

Lastly, this policy is akin to a number of other countries and cities around the world that have set future dates to eliminate the sale of gasoline vehicles. In such a global market, it is important for the State of Hawai'i to continue to lead by example, join the commitment made by the four counties and further show the world that Hawai'i is serious about the sustainability and resiliency of our community by encouraging EVs and EV infrastructure as this bill proposes.

Thank you for this opportunity to testify.

Respectfully,

Amy Hennessey, APR
Senior Vice President, Communications & External Affairs

Investing in a Sustainable Hawai'i



HB 2699, HD 2, RELATING TO THE ENVIRONMENT

FEBRUARY 21, 2020 · HOUSE FINANCE
COMMITTEE · CHAIR REP. SYLVIA LUKE

POSITION: Support.

RATIONALE: IMUAlliance supports HB 2699, HD2, relating to the environment, which establishes clean ground transportation goals for state agencies on a staggered basis until achieving a 100 per cent light-duty motor vehicle clean fleet by 12/31/2035, and for all light-duty motor vehicles in the State by 12/31/2045.

According to a report produced by the Hawai'i Climate Change Mitigation and Adaptation Commission, global sea levels could rise more than three feet by 2100, with more recent projections showing this occurring as early as 2060. In turn, over the next 30 to 70 years, approximately 6,500 structures and 19,800 people statewide will be exposed to chronic flooding.

Additionally, an estimated \$19 billion in economic loss would result from chronic flooding of land and structures located in exposure areas. Finally, approximately 38 miles of coastal roads and 550 cultural sites would be chronically flooded, on top of the 13 miles of beaches that have already been lost on Kaua'i, O'ahu, and Maui to erosion fronting shoreline armoring, like seawalls.

Furthermore, according to research conducted by Michael B. Gerrard from Columbia Law School, modern-day slavery tends to increase after natural disasters or conflicts where large numbers of people are displaced from their homes. In the decades to come, says Gerrard, **climate change will very likely lead to a significant increase in the number of people who are displaced**

and, thus vulnerable, to human trafficking. While the Paris Climate Agreement of 2015 established objectives to limit global temperature increases and several international agreements are aimed at combating modern-day slavery, it is highly uncertain whether they will be adequate to cope with the scale of the problem that is likely to occur as a result of climate change.

As we work to reduce carbon emissions and stave off the worst consequences of climate change, we must begin preparing for the adverse impact of sea level rise on our shores. We are now quantifying the speed at which we must act. We cannot continue to develop the 25,800-acre statewide sea level rise exposure area—one-third of which is designated for urban use—without risking massive structural damage and, potentially, great loss of life.

Therefore, **our state must take bold steps to address the worsening climate crisis, which is exacerbated by a transportation sector that is still too heavily reliant on fossil fuels, like oil and natural gas.** According to the U.S. Energy Information Administration, the burning of fossil fuels was responsible for 76 percent of U.S. greenhouse gas emissions in 2016. These gases contribute to the greenhouse effect and are a primary driver of the pending climate catastrophe.

Honolulu and Maui Counties recently announced lawsuits against fossil fuel companies for the role they have played in the climate crisis. Just like with tobacco and pharmaceutical companies, fossil fuel corporations are being held financial accountable for taking reckless actions that jeopardized public health. At the same time, we should work to **divest our state's transportation sector from contributing to global harm by taking steps to incentivize the public purchase of electric vehicles and ensure that government vehicles are part of Hawai'i's pathway toward reducing carbon emissions, ultimately bankrupting the businesses that have placed our planet in peril and helping to limit global warming below 1.5 degrees Celsius.**

For the sake of our overheating Earth, we cannot afford to wait.



**Hawaiian
Electric**

**TESTIMONY BEFORE THE
HOUSE COMMITTEE ON FINANCE**

H.B.2699, HD2

Relating to the Environment

Friday, February 21, 2020, FIN Agenda #2
12:00 PM, Agenda Item # 1
State Capitol, Conference Room 308

Michael Colón
Manager, Electrification of Transportation
Hawaiian Electric Company, Inc.

Aloha Chair Luke, Vice Chair Cullen and Committee Members,

My name is Michael Colón and I am testifying on behalf of Hawaiian Electric Company, Inc. (Hawaiian Electric) in support of H.B. 2699, HD2, Relating to Electric Vehicles. Hawaiian Electric **supports this measure** because it will strengthen Hawaii's commitment to clean ground transportation and help drive investment resulting in quantifiable emissions reductions.

This landmark bill would bring the transportation sector in line with the state's clean energy goals by seeking the ultimate elimination of fossil fuels for ground transportation. Hawaiian Electric supports the legislature's broad vision and substantial commitment to carbon reduction and applauds the legislature's intent to have the State lead by example by converting its own fleet over the next 15 years. This bill will also help align clean energy planning with transportation in new and dynamic ways. Hawaiian Electric anticipates leveraging forecasted electric load growth to integrate renewable energy at a new scale, with increased opportunity for grid integration and demand response.

Reducing barriers to adoption and facilitating the electrification of transportation is one of the Company's top priorities established in our *Electrification of Transportation Strategic Roadmap*. In addition, Hawaiian Electric applauds the acknowledgment that this bill intends to establish a goal to help drive future clean transportation policies.

Accordingly, Hawaiian Electric supports H.B. 2699, HD2. Thank you for this opportunity to testify.



SIERRA CLUB OF HAWAI'I

HOUSE COMMITTEE ON FINANCE

February 21, 2020 12:00 PM Room 308

In **SUPPORT** of **HB2699 HD2**: Relating to the Environment

Aloha Chair Luke, Vice Chair Cullen, and members of the committee,

On behalf of our 20,000 members and supporters, the Sierra Club of Hawai'i **supports HB2699**, which seeks to reduce and ultimately eliminate carbon-based ground transportation in the Hawaiian Islands.

We support adopting a clean transportation target to align with existing clean energy and carbon neutrality by 2045 goals. Since adopting the 100% renewable energy goal, the state has made considerable progress in fostering collaborative efforts to reform electricity policy. Because the transportation sector accounts for almost two-thirds of the state's fossil fuel consumption, more focus must be placed on ground transportation to truly achieve energy independence in Hawai'i. Reducing ground transportation reliance on fossil fuels also helps to reduce air and water pollution, increase our energy independence, and cut the carbon emissions that contribute to climate change.

Sierra Club supports the approach in HB2699 to stagger goals for clean ground transportation, beginning with state agencies by 2035 and all light-duty vehicles in Hawai'i by 2045. This bill is also consistent with commitments made by the four counties, who in December 2017 signed proclamations to commit to 100% clean ground transportation by 2045. We support the State Legislature's efforts to pass a law to solidify these existing county commitments. We do note that it will also be important to provide funding to the agencies, as well as adopt other EV charging infrastructure and vehicle incentives to help make this transition and achieve these goals.

Thank you very much for this opportunity to provide testimony in **support of HB2699**.

Mahalo,

Jodi Malinoski, Policy Advocate



183 Pinana St., Kailua, HI 96734 • 808-262-1285 • info@350Hawaii.org

To: The House Committee on Finance
From: Brodie Lockard, Founder, 350Hawaii.org
Date: Friday, February 21, 2020, 12:00 pm

In strong support of HB 2699 HD2

Dear Chair Luke, and members:

350Hawaii.org's 6,000 members strongly support HB 2699 HD2.

The transportation sector contributes more to the Climate Crisis than any other sector in Hawaii. More than two-thirds of the fossil fuel imported into the State is used for transportation.

The State's vehicle fleet needs to be changed to electric vehicles (EVs) as quickly as possible. The dates in this bill are five years too late. But they're a start.

The private sector should be fully capable of providing the infrastructure needed to accommodate 100% EVs.

Our four mayors have already committed to fully-electric fleets.

It's time for the State to step up. HB 2699 would lead the way for every vehicle in the state to be electric.

Brodie Lockard
Founder, 350Hawaii.org

HB-2699-HD-2

Submitted on: 2/19/2020 8:28:39 PM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Climate Protector	Climate Protectors Coalition	Support	No

Comments:

NOTICE OF HEARING

DATE: Friday, February 21, 2020

TIME: 12:00 P.M.

Conference Room 308

State Capitol

PLACE:

415 South Beretania Street

Aloha Chair Luke, Vice Chair Cullen and members of the Committee on Finance.

The Climate Protectors Coalition strongly supports HB 2699 HD2

We are a new group inspired by the Mauna Kea Protectors but focused on reversing the climate crisis. As a tropical island State, Hawaii will be among the first places harmed by the global climate crisis, with more intense storms, loss of protective coral reefs, and rising sea levels. We must do all we can to reduce our carbon footprint and become at least carbon neutral as soon as possible.

We need clean transportation goals as set forth in this bill to reach the 100% renewables goal by 2045. Please pass this bill. Mahalo!



ELEMENTAL
EXCELERATOR

**Written Statement of Elemental Excelerator
before the House Committee on Finance
February 21, 2020**

**In consideration of [HB 2699 HD 2](#)
RELATING TO THE ENVIRONMENT**

Aloha Chair Luke, Vice-Chair Cullen, and Members of the House Committee on Finance:

Elemental Excelerator respectfully **submits support for the intent of HB 2699 HD 2**, which establishes clean ground transportation goals for state agencies on a staggered basis until achieving a 100 per cent light-duty vehicle clean fleet by 12/31/2035, and for all light-duty vehicles in the State by 12/31/2045.

Elemental Excelerator is a Honolulu-based non-profit organization that supports climate positive startup companies that are helping solve Hawai'i's most urgent environmental problems. Each year, we select 15-20 companies annually that best fit our mission and fund each company up to \$1 million. To date, we have awarded \$36 million to 99 companies resulting in over fifty demonstration projects in Hawai'i & the Asia Pacific. Fifteen percent of Elemental Excelerator's portfolio has companies like AMPLY, KIGT, eMotorWerks, and Chargetrip that specifically support solutions that advance the electrification of transportation.

We support the intent of HB 2699 HD 2 because it signals to the broader mobility innovation sector Hawai'i's commitment to growing its economy through cleantech innovation and opens opportunities to mobility companies like the ones in our portfolio to support our state's ambitious goals. The City & County of Honolulu is currently analyzing pathways toward clean transportation goals that evaluate both vehicle miles traveled as well as electrification. We recommend that the language in this bill set targets for fleets under State control and work with the State Energy Office, Office of Planning, and utilities to identify pathways for clean transportation.

Mahalo for the opportunity to provide testimony on this legislation.

Sincerely,

A handwritten signature in black ink, appearing to read 'Aki Marceau'.

Aki Marceau
Managing Director, Policy & Community



John Uekawa, President
 Dave Rolf, Executive Director

HADA Testimony OPPOSED HB2699 HD2
 RELATING TO THE ENVIRONMENT
 Presented to the House Committee on Finance
 at the Public Hearing 12 Noon., Friday, February 21, 2020
 in Room 308 Hawaii State Capitol

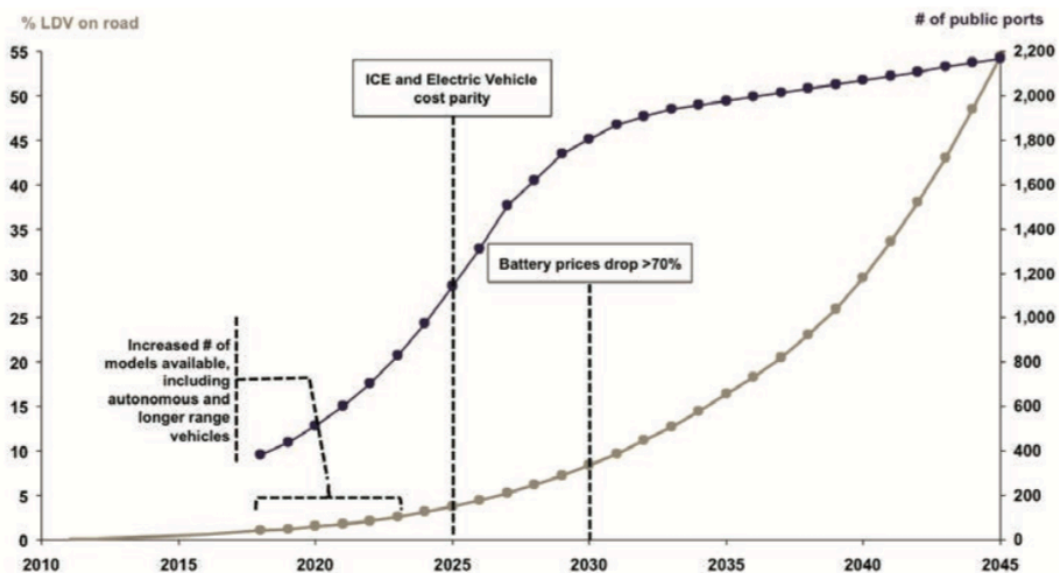
by David H. Rolf for members of the Hawaii Automobile Dealers Association,
Hawaii's franchised new car dealers, who provide sales, warranty work and other factory-certified maintenance service for Hawaii's privately-owned and fleet-owned cars and light trucks

Chair Luke, Vice chair Cullen, and members of the committee:

HADA members appreciate the opportunity to provide input on HB2699 HD2—a bill which proposes to establish clean ground transportation goals for state agencies on a staggered basis until achieving a 100 per cent light-duty vehicle clean fleet by 12/31/2035, and for all light-duty vehicles by 12/31/2045.

HADA opposes the target date of 12/31/45 set for all light-duty vehicles in the state because no roadmap or plan has been set for including the electric charging and hydrogen production and fueling infrastructure necessary for such a transition by that time. In the HECO roadmap for the transition to electric vehicles, the utility lists a possible attainment of 55% EVs by 2045. Here's their graphic.

Figure 19. Hawaiian Electric's personal light-duty EV adoption forecast, O'ahu, 2010 – 2045

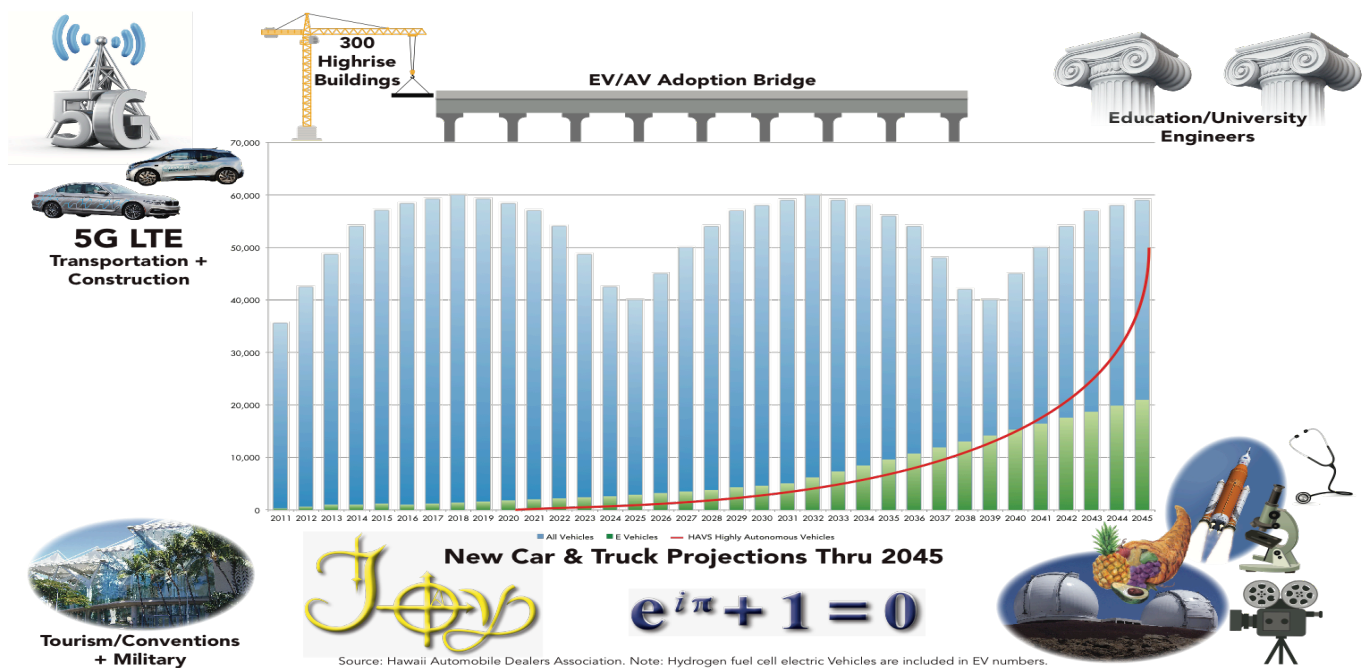


Source: Hawaiian Electric

HADA dealers, over the years, have ardently worked to help the State transition to renewable fuel vehicles. Dealers have paid to purchase thousands of electric vehicles for their inventories, paid to send their auto technicians off for training in the new technology, and paid to install expensive electric vehicle infrastructure and charging stations in their dealerships. Their efforts, and efforts of others have resulted in Hawaii posting the #2 rate of customer purchases of EVs, in the nation. Second only to California.

Reaching a 100 per cent light-duty clean fleet for all light-duty vehicles by 12/31/2045 provides an infrastructure challenge, and additionally may force the removal of many hybrid vehicles and other likely highly fuel-efficient vehicles that still operated on roadways by that date. HADA believes the process is an evolution, not a revolution, and that the free market provides the best path to achieving Hawaii's goals.

So, where are we now in electric vehicle uptake and what is the likely uptake scenario through 2045?



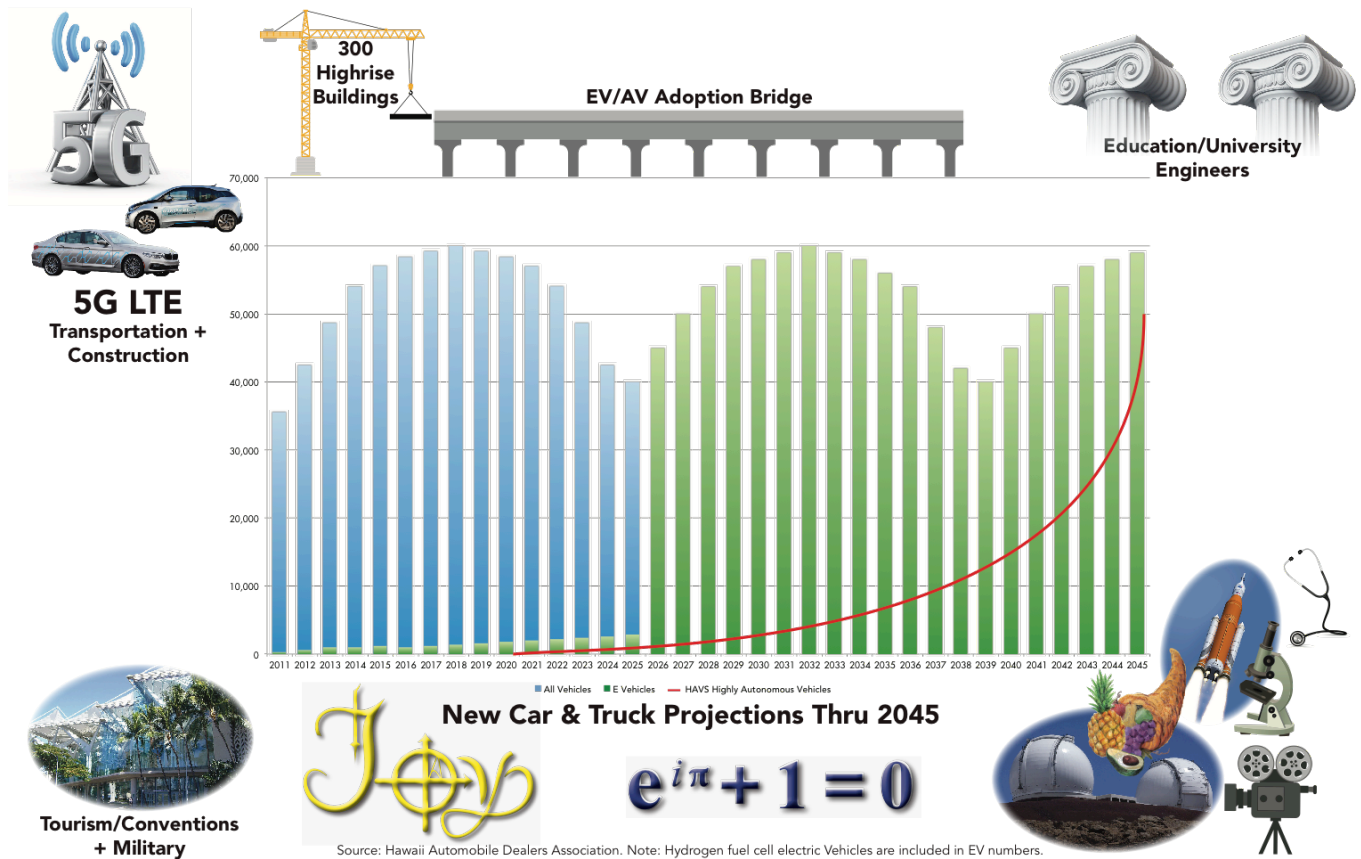
The HADA Rosetta Stone graphic shows our association's predictions of EV / HFCEV uptake by customers through 2045 at 29%. Which corresponds to independent uptake percentage projections by major auto manufactures. (Note we use Euler's Identity, as a mathematical proof of "JOY" because the process of transition to renewable fuels is going to be hard so we thought it might as well be joyful.)

There are around 10,000 EVs on Hawaii roadways now. Less than 1%.

HADA notes, that if the (light duty cars and trucks... units in operation, UIO, remain the same at approximately 1 million units...and Hawaiian Electric Company predicts, in their "Roadmap" that, not 100%, but 55% of the vehicles on the roadways in 2045 would be electric.... that their grid by that time could handle that many electric vehicles.

Reaching 100% EV/HFCEV vehicles by 2045 would require 100% of all new vehicles sold after 2025 to

be EVs/ or HFCEVs. And the graph would look like this, if Units in Operation (UIOs) remained at current private vehicle levels.

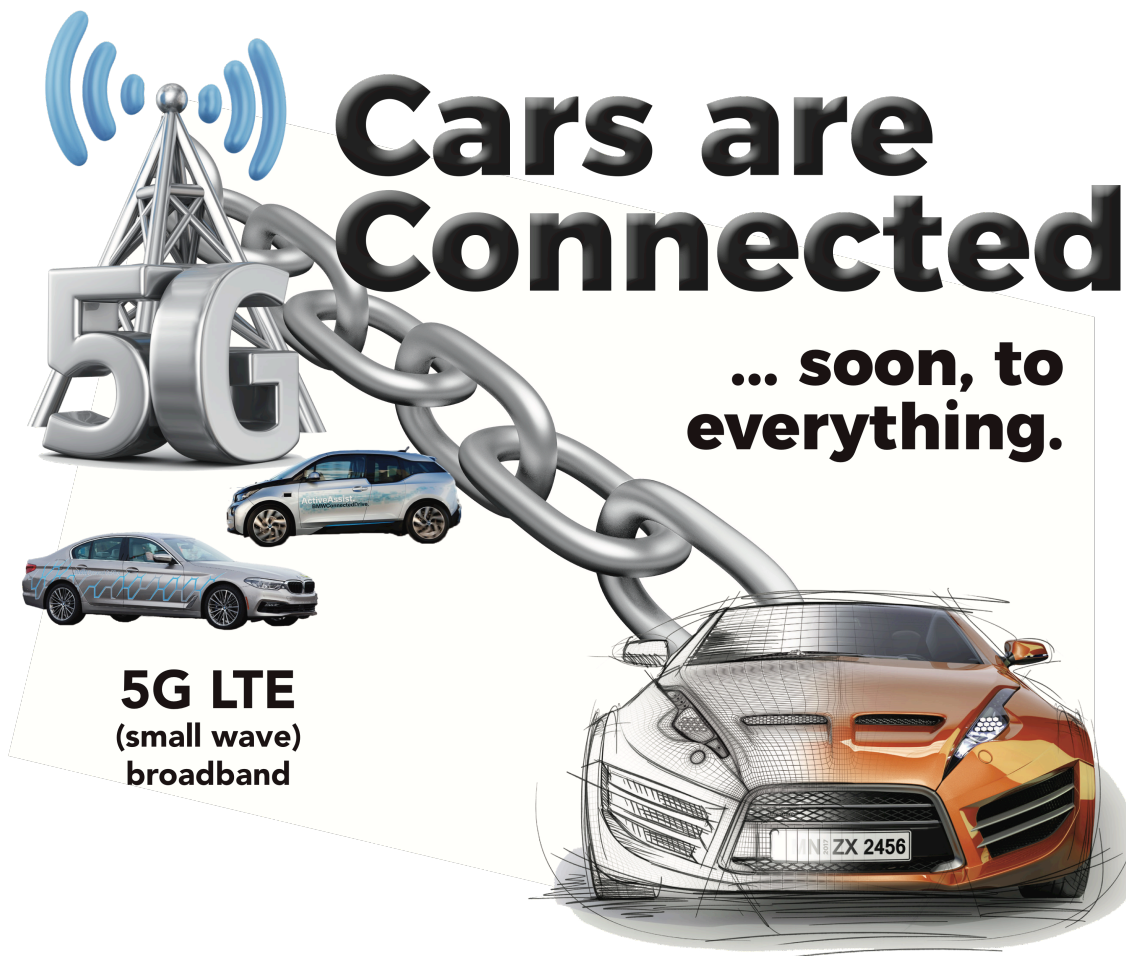


This scenario, jumping from 8% of EV sales in 2025 to 100% overnight so to speak, remains challenging because HECO could not likely provide the infrastructure for 100% EVs, and certainly it would be difficult to put in that much hydrogen fuel cell infrastructure almost overnight to meet this scenario, and a 100% goal.

Soon, however, with the introduction of 5G technology, “Cars will be Connected to Almost Everything.”

That’s why HADA has proposed working with so many sectors (The Energy Sector, The Broadband Sector, The Transportation Sector, The Housing Sector, The Artificial Intelligence Sector, the Higher Education Community and more.

And that’s why HADA has proposed the movement to the renewable energy goal through private enterprise and the "AV-pockets concept" around the coming rail stations. It all ties in with the Hawaii Executive Order 17-07 announcing that “Hawaii is open for business for the testing and development of autonomous vehicles.” (Many of which, will be EVs and HFCEVs in the future...helping Hawaii to reach its renewable energy goals while boosting the Hawaii economy)



HADA appreciates the opportunity to offer COMMENTS on HB2699 HD2, and respectfully asks that the committee delete the 100% goal by 12-31-45 for all light-duty vehicles. HADA is Making Hawaii Better Together.

We are working on helping the State economy with a large, all-encompassing plan that includes, Multi-modal Transportation, Clean Energy, Affordable Housing, Retail development, Broad Band development, Artificial Intelligence development, Introduction of the Driverless Car, Care for the Environment, Focus on Sustainability and more. Indeed, cars are connected to everything.

Clarity on how a 100% goal can be accomplished in ground transportation is much needed before such a 100% goal for light-duty vehicles is published.

Respectfully submitted,

David H. Rolf, for the members of the Hawaii Automobile Dealers Association

HADA

Making Hawaii Better Together



SanHi

GOVERNMENT STRATEGIES

A LIMITED LIABILITY LAW PARTNERSHIP

DATE: February 20, 2020

TO: Representative Sylvia Luke
Chair, Committee on Finance

FROM: Tiffany Yajima

RE: **H.B. 2699, H.D.2 – Relating to the Environment**
Hearing Date: Friday, February 21, 2020 at 12:00 p.m.
Conference Room: 308

Dear Chair Luke, Vice Chair Cullen, and Members of the Committee on Finance:

On behalf of the Alliance for Automotive Innovation (“Alliance”) we submit these comments supporting the intent of H.B. 2699, H.D.2, but expressing concerns with section 3 and section 4 of the bill which establish a 2045 goal for all passenger cars in the state to be gasoline-free alternative fuel vehicles.

The Alliance for Automotive Innovation is the singular, authoritative and respected voice of the automotive industry. Focused on creating a safe and transformative path for sustainable industry growth, the Alliance for Automotive Innovation represents the manufacturers producing nearly 99 percent of cars and light trucks sold in the U.S. Members include motor vehicle manufacturers, original equipment suppliers, technology, and other automotive-related companies and trade associations.

The Alliance supports efforts to transition public fleets and public fleet procurement preferences in favor of zero emission vehicles. Government support for zero emission vehicles, charging infrastructure, and alternative fuel deployment is essential to the overall transition to cleaner transportation. As leaders in transportation planning, state agencies can facilitate these opportunities for fleet electrification.

However, automobile manufacturers are concerned that sections 3 and 4 of this measure establish a statutory timeline for the transition to alternative fuel vehicles based upon the unrealistic goal of achieving 100% gasoline-free passenger cars on Hawaii’s roads by the end of 2045. California, with the most aggressive clean transportation goals in the country, contemplates about 50% of its fleet being powered by fossil fuel in 2050. This bill contemplates the entire fleet of all passenger vehicles in Hawaii to be fossil fuel-free by the end of 2045.

In order to meet the 100% goal by the end of 2045, it would require that by 2033, at a minimum, all passenger cars sold in the state would have to be alternative fuel vehicles, because the average life of a vehicle is 12 years, and can be much longer

in Hawaii. Gasoline-powered vehicles will still be part of Hawaii's vehicle mix for years to come. Even California does not contemplate 100% of its vehicles to run on alternative fuels.

The California Air Resources Board (ARB) believes the state of California's 2050 GHG reduction targets can be met if, in the light-duty market, 100% of new vehicles sold in the state in 2050 are plug-in hybrid electric vehicles (PHEVs), battery electric vehicles, or hydrogen fuel cell vehicles. California's goal, in and of itself a challenging one, is seen as attainable by 2050, five years after the 2045 goal for Hawaii that is set out in this bill. Even if ARB's projection is met, millions of gasoline and diesel vehicles would still be on California's roads in 2050, since any used car or truck, as well as any PHEV sold in 2050 and beyond, would still require gasoline or diesel to run.

No state has ever proposed a goal as aggressive as this. Establishing such an unrealistic goal for our state, and requiring state agencies to develop actionable strategies to meet this goal, could have the unintended consequence of burdening low-income working people and families who cannot afford the higher prices of new electric vehicles.

If the intent of this bill is to support the electrification of state fleets, we suggest amending sections 3 and 4 to remove the 2045 date for all private light-duty motor vehicles.

The Alliance is very interested in continuing to dialogue with the Department of Transportation, the State Energy Office, and any other stakeholders to set reasonable goals for the transportation sector.

Thank you for the opportunity to submit these comments.



TESTIMONY REGARDING HB 2699 HD2

**being heard by the House Committee on Finance
on Friday, February 21, 2020 at 12:00 PM
Conference Room 308**

Aloha Chair Luke, Vice Chair Cullen and Members of the Committees:

Thank you for the opportunity to provide on HB 2699 HD2 which would establish clean ground transportation goals for state agencies such that 100 percent of their light duty fleets would have to be 100% renewably powered by December 31, 2045. Although laudable in its intent, Tesla is concerned that unless amended to further clarify that electric vehicles will count toward the clean ground transportation goals proposed, the measure will inappropriately narrow the scope of vehicle technologies that are deployed meet the bill's targets.

Tesla's mission is to accelerate the world's transition to sustainable energy through the deployment of electric vehicles and sustainable energy products, like storage and solar energy systems. Tesla is the only domestic mass market automobile manufacturer that exclusively builds and sells electric vehicles. To date we have sold over 900,000 EVs globally.

In 2018, the Mayors of Hawaii established an ambitious goal to eliminate the use of fossil fuels from ground transportation by 2045, recognizing the profound economic, energy security and environmental challenges that dependency on fossil fuels imposes on Hawaii and its residents. Bringing this proclamation to fruition will require concerted efforts by the state to support the deployment of alternative-fueled vehicles. Establishing clear goals for the procurement of these vehicles by state agencies has a potentially important role to play in achieving this, but such goals need to be carefully crafted so as to not limit the technological pathways that may be pursued.

Tesla is specifically concerned that this measure, by establishing goals for the share of vehicles in agency fleets that must be "powered by renewable sources", but without a clear definition for what qualifies as meeting this criterion, will create confusion and potentially result in the inadvertent exclusion of certain technologies, like battery electric vehicles, from counting toward these targets, despite the proven capacity of these types of vehicles to play a central role in decarbonizing the transportation sector.

To address this, Tesla asks that the term "powered by a renewable source" be clearly defined and to explicitly include plug-in battery electric vehicles. The deployment of pure electric vehicles is entirely consistent with objectives to eliminate the use of fossil fuels from ground transportation particularly within the context of Hawaii where the state's electricity system is on the path to 100% renewable energy by 2045.

Additionally, while Tesla supports the directive to the Department of Transportation, in consultation with the Hawaii State Energy Office, to develop strategies to transition all light-duty vehicles in the state, public and private, to achieve the 100% renewably powered goal, we are concerned that this effort is



both too narrow, and also does not establish any timelines for completion of this initiative or require any stakeholder engagement.

Regarding the narrowness of the effort, Tesla believes that it should include strategies to transition light, medium and heavy duty vehicles given the importance of eventually transitioning all vehicles away from fossil fuels. The legislation should also ensure that the development of these strategies is done in a timely manner by requiring the Department of Transportation to submit a final report to the legislature before the start of the 2021 legislative session. This will allow the study to inform additional legislative action that may be needed to further facilitate the transition away from fossil fuels. Additionally, this effort should require robust stakeholder engagement by directing the Department to meet regularly with stakeholders throughout the strategy development process and provide an opportunity for comments on a draft of the report before it is finalized and submitted to the legislature.

Tesla appreciates the opportunity to submit this testimony.

HB-2699-HD-2

Submitted on: 2/19/2020 8:53:24 PM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Andrea Quinn	Individual	Support	No

Comments:

Dear Honorable Committee Members:

Please support HB2699. Coral reefs are dying in large part to warming oceans, and valuable coastline is eroding due to sea level rise. Climate change is already occurring. Promoting the use of electric vehicles is an important step in mitigating global warming.

Thank you for the opportunity to present my testimony.

Andrea Quinn

Kihei, Maui

HB-2699-HD-2

Submitted on: 2/19/2020 1:31:45 PM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Jessica dos Santos	Individual	Support	No

Comments:

HB-2699-HD-2

Submitted on: 2/19/2020 3:24:22 PM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Olan Leimomi Fisher	Individual	Support	No

Comments:

Aloha mai,

This bill is **necessary** to accomplish Hawai'i's goal for 100% renewable & clean energy by 2045. The 10,000 or so electric cars that are currently on island are clearly not enough to support this goal without further legislation - we only have 25 years left, which isn't much time for such a drastic change! As a resident of central O'ahu with work, family, & friends located all over the island, I am saving up to afford an electric car as soon as possible to personally help further this goal. This should be a priority for EVERYONE, and with the leadership of our policymakers it can be! Mahalo nui loa for the opportunity to provide testimony, and please pass this bill.

'O ke aloha,

Olan Leimomi Fisher

HB-2699-HD-2

Submitted on: 2/19/2020 4:26:11 PM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Diane Ware	Individual	Support	No

Comments:

Dear Chair Luke and Comittee Members,

My name is Diane Ware and I live in Volcano. This measure is very important to curbing climate change. I am a senior and live rural and in the forest. Please encourage EV's and providing more charging stations, especially solar ones. Then I will buy one. I feel guilty driving but distances on the Big Island contribute to our high emissions.

Please approve this bill for our future.

Mahalo,

Diane Ware, 99-7815 Kapoha Volcano

Date: February 21, 2020

To: House Committee on Finance

From: Benton Kealii Pang, Ph.D.

Re: HB2699 HD2

Aloha Chair Sylvia Luke, Vice-Chair Ty Cullen, and members of the House Committee on Finance,

As a native Hawaiian conservationist for the past 30 years, I **SUPPORT HB 2699 HD2**. This bill establishes clean ground transportation goals for state agencies on a staggered basis until achieving a 100 per cent light-duty motor vehicle clean fleet by 12/31/2035, and for all light-duty motor vehicles in the State by 12/31/2045.

The consistent use of fossil fuels by the State of Hawai'i has contributed to significant rises in greenhouse gases. These emissions cause climate change and threaten our economy, public health, infrastructure, and environment. The goals stated in this bill are achievable because Hawai'i's citizens know how to act when our economy and environment is threatened. Therefore, I respectfully urge the Committee to PASS HB 2699 HD2.

HB-2699-HD-2

Submitted on: 2/20/2020 4:14:27 AM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Nanea Lo	Individual	Support	No

Comments:

Dear Chair Luke, and members:

As one of 350Hawaii.org's 6,000 members, I strongly support HB 2699 HD2.

The transportation sector contributes more to the Climate Crisis than any other sector in Hawaii. More than two-thirds of the fossil fuel imported into the State is used for transportation.

The State's vehicle fleet needs to be changed to electric vehicles (EVs) as quickly as possible. The dates in this bill are five years too late. But they're a start.

The private sector should be fully capable of providing the infrastructure needed to accommodate 100% EVs.

Our four mayors have already committed to fully-electric fleets.

It's time for the State to step up. HB 2699 would lead the way for every vehicle in the state to be electric.

me ke aloha 'Ä• ina,

Nanea Lo

HB-2699-HD-2

Submitted on: 2/20/2020 6:14:44 AM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Caroline Kunitake	Individual	Support	No

Comments:

Dear Chair Luke and Members of the House Committee on Finance,

As one of 350Hawaii.org's 6,000 members, I strongly support HB 2699 HD2.

The transportation sector contributes more to the Climate Crisis than any other sector in Hawaii. More than two-thirds of the fossil fuel imported into the State is used for transportation.

The State's vehicle fleet needs to be changed to electric vehicles (EVs) as quickly as possible. The dates in this bill are five years too late. But they're a start.

The private sector should be fully capable of providing the infrastructure needed to accommodate 100% EVs.

Our four mayors have already committed to fully-electric fleets.

It's time for the State to step up. HB 2699 would lead the way for every vehicle in the state to be electric.

Please pass this bill.

Mahalo,

Caroline Kunitake

HB-2699-HD-2

Submitted on: 2/20/2020 10:20:54 AM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Phaethon Keeney	Individual	Support	No

Comments:

HB-2699-HD-2

Submitted on: 2/20/2020 2:59:46 PM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Dale Jensen	Individual	Support	No

Comments:

Chair Luke, and members:

I strongly support HB 2699 HD2.

The transportation sector contributes more to the Climate Crisis than any other sector in Hawaii. More than two-thirds of the fossil fuel imported into the State is used for transportation.

The State's vehicle fleet needs to be changed to electric vehicles (EVs) as quickly as possible. The dates in this bill are five years too late. But they're a start.

The private sector should be fully capable of providing the infrastructure needed to accommodate 100% EVs.

Our four mayors have already committed to fully-electric fleets.

It's time for the State to step up. HB 2699 would lead the way for every vehicle in the state to be electric.

Sincerely,

Dale Jensen, Prof. Engineer.

LATE

HB-2699-HD-2

Submitted on: 2/20/2020 5:32:36 PM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Janet Pappas	Individual	Support	No

Comments:

Dear Chair Luke, and FIN members,

I very strongly support HB2699 HD2--with some comments.

Our family has had an electric vehicle (Nissan Leaf) since 2011. That's 8 years and 72,000 miles we have driven gas-, oil- and transmission fluid-free, and we would never go back. For the savings in maintenance alone (we have bought only tires and new windshield wiper blades; and we got a free, under-warranty battery at four years), the State should begin its transition to EVs immediately. The savings in gas is, of course also worth a mention. I'm glad we didn't wait!

According to climate scientists, we have about ten years to make a significant dent in global warming before things get really expensive. The transportation sector makes up a huge chunk of the problem. Every year we delay, the greater our climate crisis "bill" will be. But, if we start planning this year (2020), start transitioning all cars bought 7 or more years ago to EVs next year (2021), and do the same thing for each of the next seven years, we could possibly reach our goal of a 100% clean State vehicle fleet in Hawaii by 2029 (giving ourselves a year grace). Here's an article on how some cities have already begun this imperative transition: <https://www.coltura.org/electrify-your-city-fleet>. Simultaneously, we can work on getting the rest of us into EVs.

Hawaii is fortunate to have a small footprint on the planet. We thus should lead the country (the world!) in clean energy vehicles.

Please pass HB2699 HD2 this session and let's see how fast we can get this done.

Thank you for the opportunity to share my views.

Sincerely,

Jan Pappas

Aiea, Hawaii

LATE

HB-2699-HD-2

Submitted on: 2/20/2020 6:32:52 PM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
tlaloc tokuda	Individual	Support	No

Comments:

To: The House Committee on Finance

From: **Tlaloc Tokuda**

Date: Friday, February 21, 2020, 12:00 pm

In strong support of HB 2699 HD2

Dear Chair Luke, and members:

As one of 350Hawaii.org's 6,000 members, I strongly support HB 2699 HD2.

The transportation sector contributes more to the Climate Crisis than any other sector in Hawaii. More than two-thirds of the fossil fuel imported into the State is used for transportation.

The State's vehicle fleet needs to be changed to electric vehicles (EVs) as quickly as possible. The dates in this bill are five years too late. But they're a start.

The private sector should be fully capable of providing the infrastructure needed to accommodate 100% EVs.

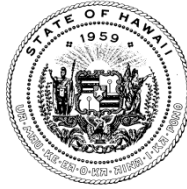
Our four mayors have already committed to fully-electric fleets.

It's time for the State to step up. HB 2699 would lead the way for every vehicle in the state to be electric.

Tlaloc Tokuda

Kailua Kona HI 96740

DAVID Y. IGE
GOVERNOR



TESTIMONY BY:

JADE T. BUTAY
DIRECTOR

Deputy Directors
LYNN A.S. ARAKI-REGAN
DEREK J. CHOW
ROSS M. HIGASHI
EDWIN H. SNIFFEN

LATE

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

February 21, 2020
12:00 P.M.
State Capitol, Room 308

H.B. 2699, H.D. 2
RELATING TO THE ENVIRONMENT.

House Committee on Finance

The Department of Transportation (DOT) **supports** this bill which establishes clean ground transportation goals for state agencies on a staggered basis until achieving a 100 percent light-duty vehicle clean fleet by 12/31/2035, and for all light-duty vehicles in the State by 12/31/2045.

The DOT continues to work and collaborate with the Hawaii State Energy Office on strategies towards the electrification of transportation in order to meet timelines of the State's clean transportation goals.

Thank you for the opportunity to provide testimony.

LATE

HB-2699-HD-2

Submitted on: 2/20/2020 8:03:30 PM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Daniel Boren	Individual	Support	No

Comments:

Dear Chair Luke, and members:

As one of 350Hawaii.org's 6,000 members, I strongly support HB 2699 HD2.

The transportation sector contributes more to the Climate Crisis than any other sector in Hawaii. More than two-thirds of the fossil fuel imported into the State is used for transportation.

The State's vehicle fleet needs to be changed to electric vehicles (EVs) as quickly as possible. The dates in this bill are five years too late. But they're a start.

The private sector should be fully capable of providing the infrastructure needed to accommodate 100% EVs.

Our four mayors have already committed to fully-electric fleets.

It's time for the State to step up. HB 2699 would lead the way for every vehicle in the state to be electric.

LATE

HB-2699-HD-2

Submitted on: 2/20/2020 8:23:11 PM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Brian Lehmann	Individual	Support	No

Comments:

LATE

HB-2699-HD-2

Submitted on: 2/20/2020 9:26:49 PM
Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Sherry Pollack	Individual	Support	No

Comments:

These timelines can and should be accelerated if we are to appropriately address the changes that scientists tell us are required to ensure a livable planet for our children.

Thank you for this opportunity to testify.

LATE

HB-2699-HD-2

Submitted on: 2/20/2020 10:05:35 PM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Audrey Enseki-Tom	Individual	Support	No

Comments:

Please pass HB2699 HD2.

LATE

HB-2699-HD-2

Submitted on: 2/21/2020 6:25:29 AM

Testimony for FIN on 2/21/2020 12:00:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Michele Nihipali	Individual	Support	No

Comments:

To: The House Committee on Finance

From: **Michele Nihipali**

Date: Friday, February 21, 2020, 12:00 pm

In strong support of HB 2699 HD2

Dear Chair Luke, and members:

As one of 350Hawaii.org's 6,000 members, I strongly support HB 2699 HD2.

The transportation sector contributes more to the Climate Crisis than any other sector in Hawaii. More than two-thirds of the fossil fuel imported into the State is used for transportation.

The State's vehicle fleet needs to be changed to electric vehicles (EVs) as quickly as possible. The dates in this bill are five years too late. But they're a start.

The private sector should be fully capable of providing the infrastructure needed to accommodate 100% EVs.

Our four mayors have already committed to fully-electric fleets.

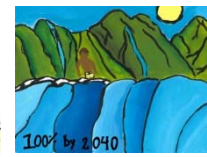
It's time for the State to step up. HB 2699 would lead the way for every vehicle in the state to be electric.

Mahalo,

Michele Nihipali

54-074 A Kam Hwy.

Hauula, HI 96717



HOUSE COMMITTEE ON FINANCE

February 21, 2020, 12:00 P.M.

Room 308

(Testimony is 6 pages long, including attachment)

LATE

TESTIMONY IN SUPPORT OF HB 2699 HD2

Aloha Chair Luke, Vice Chair Cullen, and members of the Committee:

Blue Planet Foundation **supports HB 2699 HD2**, which sets a planning vision for the elimination of fossil fuels from ground transportation in Hawai'i by 2045. This bill will help to promote alignment and collaboration in ongoing and future planning efforts for multiple aspects of the state's transportation energy sector.

HAWAI'I NEEDS A VISION FOR 100% CLEAN TRANSPORTATION

The legislature has long stressed the importance of the state's transition to a renewable energy system. For example, in 2001's Act 272 the legislature adopted a renewable standard for electricity, recognizing "the economic, environmental, and fuel diversity benefits of renewable energy resources" and encouraging further development of renewable resources. The legislature found that "while Hawaii is a national leader in the development of renewable energy resources for electricity production, there may be more that the State can do to encourage the development and implementation of renewable energy. These efforts can reduce the amount of imported oil used for the generation of electricity."

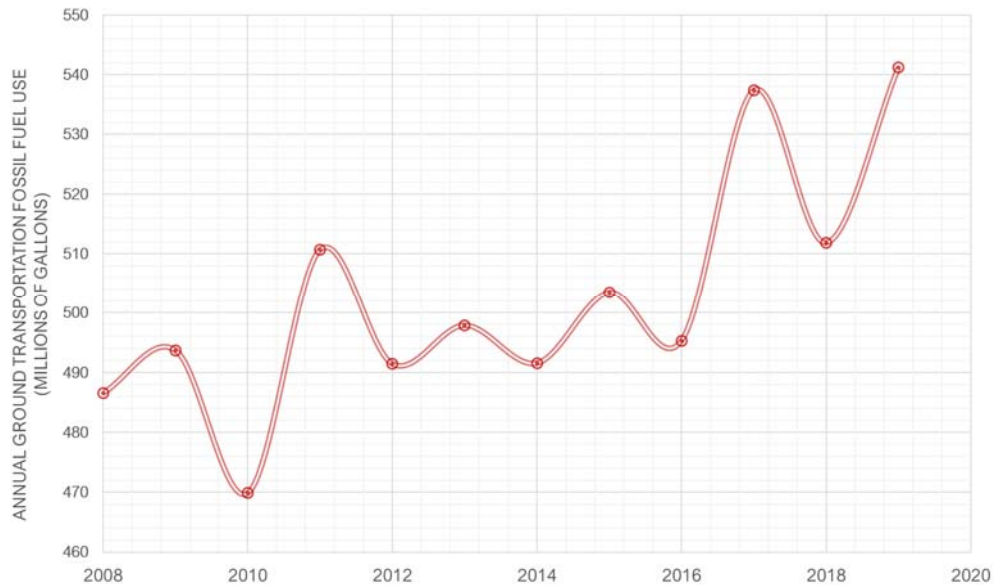
More recently, Hawai'i's leaders set a vision for 100% renewable electricity by 2045, becoming the first state in the nation to set such a target. That vision has become a driving force in electricity planning, and a focal point for a variety of key energy issues.

While Hawai'i has made substantial progress on policies, programs, and actions to reduce burning fossil fuels in the electricity sector, **we are falling short on decarbonizing our ground transportation sector**. Greenhouse gas emissions from transportation are increasing. Last year, we sold 6% more gasoline than the previous year.¹ Over one million gasoline-powered vehicles are on Hawai'i's roads—and from them comes nearly five million metric tons of climate-changing carbon pollution. Although we now have over 11,000 electric vehicles (EVs) on Hawai'i's roads, they still only make up a mere 1% of all registered vehicles in the state.²

¹ *DBEDT Monthly Energy Trends*, February 2020, <http://dbedt.hawaii.gov/economic/energy-trends-2/>.

² *Id.*

Recognizing that emissions from ground transportation have been increasing in recent years, in December 2017, **the mayors from all four of Hawai'i's counties pledged to transform ground transportation to 100 percent renewable fuel by 2045.** The purpose of their action was to set a vision for clean, modern mobility options for all. This goal is necessary and achievable. **The state should support these county goals and set its own goal for 100% renewable ground transportation.**



Hawaii Annual Fossil Fuel Consumption for Cars and Trucks

With the mayors' proclamations in December 2017, Hawai'i joined the ranks of several countries who have also recognized that fossil fuel-powered ground transportation needs to end. **Both France and Britain have set a target phasing out the sale of new gas cars by 2040.** India, Netherlands, Israel, and Denmark have set a similar goal for 2030. Belgium, Sweden, and Norway are developing policies to do the same. China also announced plans to electrify its entire vehicle fleet. These countries recognize the environmental imperative for setting long-term transportation policies. Here, policy is key, as the market fails to account for the environmental and social cost of carbon pollution from vehicles today.

In the current national political climate, the importance of a vision for our state energy plan cannot be overstated. News reports from indicate that President Trump is attempting to dismantle progress on decarbonization. He intends to weaken vehicle fuel efficiency, end a moratorium on new coal mines, stop the Clean Power Plan, and eliminate a review of climate impacts in environmental impact statements. Without state action, these steps will hurt local consumers and our environment, simply to line the pocket of the fossil fuel industry.

Hawai'i's leaders must set the state's own vision and narrative for local, clean energy.

Answers to several Frequently Asked Questions are attached to this testimony. Topics include:

- The **urgent need** for a planning target date for 100% clean transportation;
- The **economic benefits** of clean transportation;
- The **achievability of a 2045 planning target**, with trends such as electrified vehicles, biofuels, and multi-modal transportation options.

Thank you for the opportunity to submit this testimony.

100% Clean Ground Transportation Frequently Asked Questions

Why is a 100% Clean Transportation Necessary?

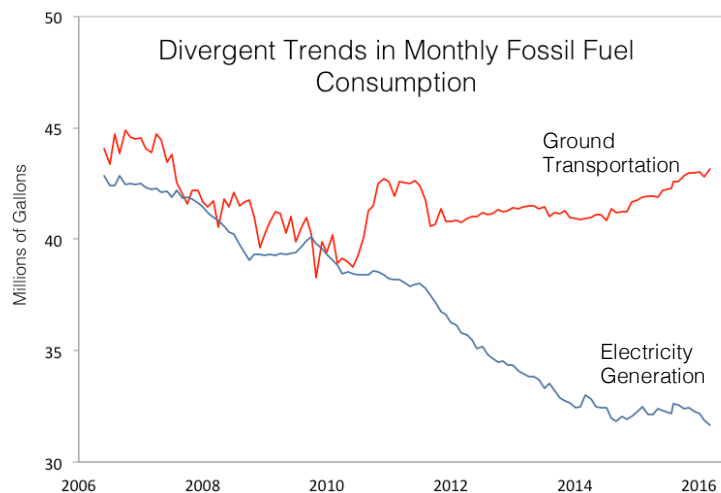
Hawai'i's policy leaders have long stressed the importance transitioning the state's energy system to clean energy. This transition has been driven by economics, and also by concern for our shared environment. As described by Governor George Ariyoshi:

“Stewardship . . . mean living with the constant reminder that our actions occur in context of other people over generations.”

Ground transportation accounts for around one-third of the state's fossil fuel consumption and greenhouse gas emissions. A resilient economy and a healthy environment require that we consider these impacts.

This is especially important in an age where 194 countries—essentially every country on earth—have agreed that it is imperative that we rapidly reduce greenhouse gas emissions.³

The state has long utilized planning targets as a way to set a course for reducing fossil fuel consumption in the electricity sector.⁴ This transformation is on track to reach the goal of 100% renewable energy by 2045. In contrast, fossil fuel consumption for ground transportation is essentially unchanged from a decade ago.



Closing this gap will require many efforts by many entities, both today and in the future. The importance of SB 2699 is that it can align those efforts around a common vision, set by the state's leaders.

What are the Economic Benefits?

The transition to clean transportation creates many opportunities for cost savings. Some of these opportunities come in the form of more efficient multi-modal transportation (e.g. saving money with more walking, biking, and public transit). Other opportunities arise from fuel-cost savings.

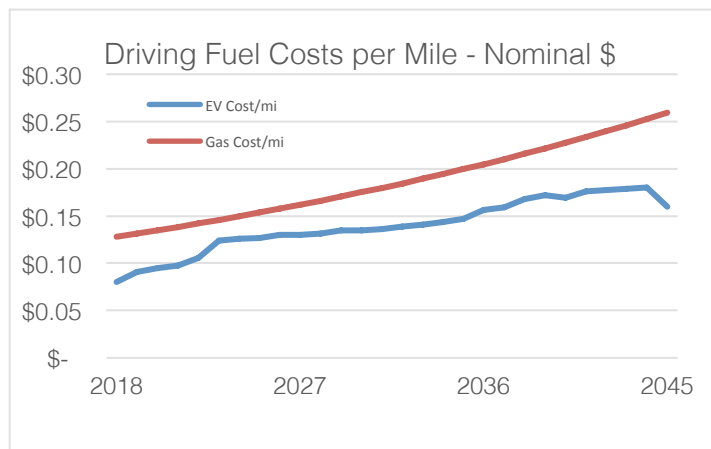
³ See Paris Agreement, U.N. Framework Convention on Climate Change (2016).

⁴ See H.R.S. § 269-91.

For example, the transition to clean energy is sure to include more electric passenger vehicles, buses, and fleet vehicles (“EVs”).⁵ This electrification trend provides a double benefit. First, the cost of powering an EV is generally less than powering an equivalent gasoline vehicle. So consumers can save money—today—by switching to an EV. Second, a growing fleet of EVs can help to balance renewable energy on the electric grid. This can lower the cost of electricity for everyone.

University of Hawai‘i Engineering Professor, Matthias Fripp, has created a quantitative model of the state’s transition to renewable energy. He has calculated that a 100% renewable transportation system, with smart EV charging to match renewable electricity generation, can be expected to **save utility consumers approximately \$150 million per year in fuel and electricity costs.**⁶

Blue Planet Foundation has evaluated recent projections for electricity rates in Hawai‘i, comparing them to a World Bank estimate of the long-term trend for increasing oil prices, under a variety of transportation scenarios. This comparison indicates that we can expect electricity to remain the cheaper fuel option through 2045, and that the potential aggregate benefit in fuel savings is on the order of several billion dollars.



Is 100% Clean Transportation by 2045 Possible?

Much like in the electricity sector, many factors will influence the pace of the state’s transition to clean energy. While some of those factors remain unknown (as is expected for a 30-year planning horizon), several important factors are apparent today:

1. The Rise of Battery Electric and Fuel Cell Vehicles

While familiar clean transportation options (like biofuels, walking, biking, public transit, etc.), and emerging technologies (like hydrogen) will undoubtedly play an important role, we expect the emergence of electric vehicles (EVs) to quickly and radically shift the state’s transportation energy landscape.

⁵ For example, auto executives recently polled by KPMG identified EVs as the top trend in the car market between now and 2025.

⁶ See M. Fripp, *Effect of Electric Vehicles on Design, Operation and Cost of a 100% Renewable Power System* (Apr. 2016).

On a global scale, important factors such as the cost of producing batteries for electric cars has fallen dramatically, from around \$1,000 per kWh to less than \$200. As we enter the second and third generation of modern EVs, a steadily increasing variety of models are coming onto the market with lower prices, larger batteries, and longer driving ranges. Nearly every major auto manufacturer is investing heavily in battery electric and/or hydrogen fuel cell electric vehicles, and views zero emission vehicles as the long-term solutions for transportation fuels.

Hawai'i is particularly well-suited for the this acceleration of EV adoption because electric batteries perform well in our year-round warm climate. Our island geography often restricts the distances we need to drive, making range anxiety less of an issue compared to other locations.

2. Transportation will Become More Multi-modal, Networked, Autonomous

The future of transportation in Hawai'i is likely to include more efficient land use that reduces travel demand and travel distances, significant improvements in mass transit, bicycling and pedestrian infrastructure, and new mobility alternatives such as autonomous taxis and other networked 'mobility as service' options. These changes are likely to shift a sizable percentage of Hawai'i's trips from personal automobiles to alternative modes and to significantly reduce transportation energy use.

With sufficiently transformative policies, the small sector of gasoline vehicles can be a small fraction of the total ground transportation sector (around 6%).

3. Biofuels are a Near-Term and Long-Term Option

Hawai'i is home to one of the leading pioneers of biofuel production, Pacific Biodiesel. Today, the state is producing commercial quantities of biofuels using local feedstocks.

In a report commissioned by DBEDT in 2010, the consultant firm Black & Veatch Corporation performed an analysis of the potential for biofuel production in the state of Hawai'i. The report found that the maximum theoretical capacity of biofuel production in the state was equal to the equivalent of 848 million gallons of "green gasoline" or 779 million gallons of "green diesel" per year (see chart below). This is around 2.5 times the total amount of gasoline and diesel used in ground transportation in Hawai'i today.

Table 1-6. Maximum Theoretical Hawai'i Biofuel Production Potential.					
Feedstock	Biofuel 10 ¹² Btus/yr	Ethanol million gal/yr	Green Gasoline equivalent million gal/yr	Green Diesel equivalent million gal/yr	Green Jet Fuel equivalent million gal/yr
Energy Crops	101	1,202	786	722	751
Cellulosic Wastes	8	95	62	57	59
Total:	109	1,297	848	779	810

Source: DBEDT (2010). "The Potential For Biofuels Production in Hawaii"

The report also concluded that "...it should be quite achievable for biofuels produced from in-state resources to displace 20 percent [over 50 million gallons] of the gasoline and diesel fuel needed for vehicle transportation in Hawai'i. This could be accomplished using about 10 percent of available agricultural land for energy crop production to supply the required biomass feedstock."

In short, local biofuels are a viable option for powering significant portions of the transportation sector.