JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

EDWIN H. SNIFFEN
DIRECTOR
KA LUNA HO'OKELE

Deputy Directors
Nā Hope Luna Ho'okele
DREANALEE K. KALILI
TAMMY L. LEE
CURT T. OTAGURO
ROBIN K. SHISHIDO

**STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I**
**DEPARTMENT OF TRANSPORTATION | KA 'OIHANA ALAKAU**
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

Tuesday, February 17, 2026
3:01 PM
State Capitol, 229

# SB2999
# RELATING TO CLEAN FUEL STANDARD

Senate Committee on Transportation, Agriculture & Environment

he Department of Transportation (DOT) supports S.B. 2999, which requires the Department of Transportation to adopt rules governing a Clean Fuel Standard (CFS) for alternative fuels in the State, thereby taking action to reach Hawai'i's statewide decarbonization and energy security targets established in law.

SB2999 establishes a framework for reducing the carbon intensity of transportation fuels used statewide by incentivizing the use of lower-carbon and renewable fuel alternatives. A clean fuel standard provides a market-based mechanism to reduce emissions from the transportation sector while decreasing the State's reliance on imported petroleum.

The DOT recognizes the critical role that fuel decarbonization plays in achieving the State's long-term energy security and transportation goals. The DOT's Hawai'i Energy Security and Waste Reduction Plan, published in October 2025, identifies the clean fuel standard as a key tool for reducing transportation-related emissions. The Plan states that "a clean fuel standard is predicted to decrease the carbon intensity of Hawai'i's transportation fuel pool and provide low-carbon and renewable alternatives that would reduce petroleum dependency" (Plan p. 73). Without the timely implementation of additional emission reduction strategies, including clean fuel policies, Hawai'i will not meet its statutory emissions reduction targets.

The DOT's Energy Security and Waste Reduction Plan has three pillars that act as check and balances to develop and prioritize the Plan's strategies: 1) affordability, 2) local energy security, and 3) emissions reduction. The Plan identified a Clean Fuel Standard as a key tool for reducing transportation-related emissions, and the DOT is researching and analyzing the impacts of a CFS on affordability for residents. Key initial findings:

- Hawai'i's fuel use is dominated by liquid fuels, with large opt-in opportunities in aviation and marine. Annual consumption includes about 425 million gallons of gasoline (typically 10% ethanol), 45 million gallons of diesel (about 8% biodiesel

blend), 725 million gallons of aviation fuel, and 55 million gallons of domestic marine fuel. EVs are about 20% of new vehicle sales.

- Supply options exist. Ethanol is fully imported, and biodiesel is locally produced. Renewable Diesel/Sustainable Aviation Fuel (RD/SAF) could grow through domestic production and imports. Electricity CI reduction hinges on grid decarbonization under the RPS.

- Scenario modeling shows substantial CI reductions are achievable, with results sensitive to clean fuel availability.

    - Moderate Scenario: 29% by 2035, 35% by 2040, 50% by 2050.
    - Aggressive Scenario: 20% by 2035, 43% by 2040, 55% by 2050.

- Modeling results indicate that a CFS could increase gasoline and diesel prices by approximately 5 to 14 cents per gallon under the Moderate scenario and 5 to 20 cents per gallon under the Aggressive scenario through 2035, assuming full pass-through of compliance costs. These impacts are primarily driven by credit market conditions and the availability of fuels used for compliance.

- Compliance with a CFS would encourage a broader mix of low carbon transportation fuels, including increased use of electrification as well as opt-in fuels such as sustainable aviation fuel and alternative marine fuels.
  As next steps, the team will continue to refine the modeling by evaluating additional CFS compliance scenarios and sensitivities, support HDOT's stakeholder engagement on program design and feasibility findings, and assess alternative policy frameworks that could be considered in lieu of a CFS program.

After reviewing the draft initial findings above, and with affordability for residents as one of the three pillars of the Energy Security and Waste Reduction Plan, the DOT is further developing the Moderate scenario and potentially to develop a third Gentle scenario with even greater emphasis on affordability for disadvantaged, rural, and underrepresented communities that may not yet have the option of immediately switching to an electric vehicle or accessing a lower Carbon Intensity fuel.

The initial findings support the Carbon Intensity reduction targets included in the bill language—10% CI reduction by 2035 and 50% CI reduction by 2045, which Gentle, Moderate, and Aggressive scenarios could meet. The initial findings demonstrate that the implementation of a Clean Fuel Standard with the targets in the bill will diversify the transportation fuel market, thereby enhancing energy security, and helping to moderate fuel prices by protecting against the volatility in the global oil market.

The DOT appreciates the amendments included by the House Committee on Transportation. The DOT does not seek an amendment in regard to Section 2(b)(4), but does wish to clarify that we do not plan to include as a credit generating pathway, alternative fuels used to displace gasoline and diesel in "...heating, cooling, and temporary power generation". There is precedent in other clean fuel standard programs for generating credits by using alternative fuels in off-road transportation applications; however, there does not appear to be precedent for credit generation pathways for the use of alternative fuels in heating, cooling, and temporary power generation.

A Hawaii Clean Fuel Standard for the foreseeable future would be a tool to reduce the Carbon Intensity and emissions from transportation fuels only, which may include off-road usage.

The DOT anticipates the need to establish three to five new positions. We propose funding these positions through salary savings from all four DOT modes, ensuring efficient use of existing resources.

Thank you for the opportunity to provide testimony in support.

**JOSH GREEN, M.D.**
GOVERNOR | KE KIA'ĀINA

**SYLVIA LUKE**
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

**STATE OF HAWAIʻI | KA MOKUʻĀINA ʻO HAWAIʻI**
**DEPARTMENT OF LAND AND NATURAL RESOURCES**
**KA ʻOIHANA KUMUWAIWAI ʻĀINA**
P.O. BOX 621
HONOLULU, HAWAII 96809

**DAWN N.S. CHANG**
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

**RYAN K.P. KANAKAʻOLE**
FIRST DEPUTY

**CIARA W.K. KAHAHANE**
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

# Testimony of
# LEAH LARAMEE
# Climate Change Coordinator on behalf of
# Climate Change Mitigation and Adaptation Commission
# Co-Chair Ryan K. P. Kanakaʻole

## Before the Senate Committees on
## TRANSPORTATION
## AND
## AGRICULTURE AND ENVIRONMENT

## Tuesday, February 17, 2026
## 3:01 PM
## State Capitol, Conference Room 229

## In consideration of
## SENATE BILL 2999
## RELATING TO A CLEAN FUEL STANDARD

Senate Bill 2999 proposes to require the Department of Transportation to adopt rules by 1/1/2028 governing a clean fuel standard for alternative fuels in the State, **The Hawaiʻi Climate Change Mitigation and Adaptation Commission (Commission) supports this measure.**

The Commission consists of a multi-jurisdictional effort between 20 departments, committees, and counties with the purpose of promoting ambitious, climate-neutral, culturally responsive strategies for climate change adaptation and mitigation.

Setting a clean fuel standard will reduce carbon pollution from transportation, the largest source of greenhouse gas (GHG) emissions in Hawaiʻi by reducing these emissions from the production and supply of transportation fuels. Washington, California, Oregon New Mexico, and British Columbia, Canada, have adopted clean fuel standards. In California, renewable natural gas (RNG) made up just 5.1% of all on-road alternative fuels and generated 19.2% of all CO2 equivalent reductions of on road alternative fuels. In addition to reducing GHG emissions, clean fuel standards diversify the transportation fuel supply and improve public health. Clean fuel standards provide economic opportunity and can create jobs associated with the production and delivery of new fuels. Clean fuel standards look at life cycle emissions, not just tailpipe emissions ensuring that truly clean fuels are identified.  Mahalo for the opportunity to comment on this measure.

February 17, 2026

**COMMENTS TO**
**SB 2999**
**RELATING TO A CLEAN FUEL STANDARD**

Senate Committee on Transportation
The Honorable Lorraine Inouye, Chair
The Honorable Brandon Elefante, Vice Chair

Senate Committee on Agriculture & Environment
The Honorable Mike Gabbard, Chair
The Honorable Tim Richards, Vice Chair

Tuesday, February 17, 2026, 3:01 p.m.

VIA VIDEOCONFERENCE
Conference Room 229
State Capitol
415 South Beretania Street

Chairs Inouye and Gabbard, Vice Chairs Elefante and Richards, and Members of the Committees,

Island Energy Services, LLC ("IES") offers the following comments on SB2999, which proposes the implementation of a Clean Fuel Standard (CFS) for Hawai'i.

The CFS program's flexibility is a key factor in its potential success. By allowing producers to choose how they reduce emissions, whether using renewable fuels or the acquisition of credits—it empowers the market to drive innovation. The program's technology neutral stance further encourages the introduction of new and diverse renewable fuels to the market.

The CFS program treats both local renewable production and renewable fuel imports equitably when considering the carbon intensity. We very much support in-state production of biofuels,

however imports will need to be part of the fuel solution to enable Hawaii to meet its long range decarbonization goals and this CFS program allows imports for that to be possible.

Hawaii should be aligning carbon regulations with the other western states and Canada (CA, OR, WA, BC) given its geographic location and market dynamics to create a level commercial playing field. Hawai'i will be in direct competition with the U.S. West Coast states and British Columbia for renewable fuels and without a carbon pricing or similar CFS program, Hawai'i will be at a distinct commercial disadvantage to attract renewable fuels.

The CFS program is an equitable way to drive carbon intensity down across end-users. IES believes that CFS programs are a more equitable way to drive carbon intensity down rather than tax-based programs. CFS programs burdens the users of the fuel rather than unfairly burdening the taxpayers of Hawaii.

Given the requirements outlined in the Navahine v. Hawaii Department of Transportation settlement to address climate concerns in the transportation sector, IES believes that fuels for intrastate marine vessels should be included in the program as well. As written, the current bill allows for exemptions for diesel, gasoline, or other fuels used by aircraft, railroad locomotives, military vehicles, and interstate waterborne vessels.

We thank the Senate Transportation and Agriculture & Environment Committees for hearing this bill and thank you for the opportunity to testify.

Albert D.K. Chee, Jr
Executive Vice President Island Energy Services, LLC

FEBRUARY 17, 2026

# SENATE BILL 2999

CURRENT REFERRAL: TRS/AEN

808-679-7454
kris@imuaalliance.org
www.imuaalliance.org
@imuaalliance

Kris Coffield,
*President*

David Negaard,
*Director*

Mireille Ellsworth,
*Director*

Justin Salisbury,
*Director*

Eileen Roco,
*Director*

Beatrice DeRego,
*Director*

Corey Rosenlee,
*Director*

Amy Zhao,
*Policy and Partnerships Strategist*

## POSITION: SUPPORT

Imua Alliance supports SB 2999, relating to a clean fuel standard, which requires the Department of Transportation to adopt rules by 1/1/2028 governing a clean fuel standard for alternative fuels in the State.

Imua Alliance is a Hawai'i-based organization dedicated to ending all forms of exploitation, including the interconnected emergencies of climate change and sexual violence. According to research conducted by Michael B. Gerrard from Colombia 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 gender abuse.

Transportation is Hawai'i's largest source of climate pollution and the state's own planning identifies clean fuels as a near-term necessity alongside electrification. In its Energy Security and Waste Reduction Plan (October 2025), the Hawai'i Department of Transportation identifies implementing a Clean Fuel Standard (also known as a CFS) as an immediate administrative strategy to "incentivize the production and distribution of cleaner fuels," and states it is "poised to start a CFS feasibility study" to evaluate affordability impacts, especially for disadvantaged and rural communities. The plan further underscores why urgency is warranted: Hawai'i's 2022 inventory shows roughly 50% of statewide emissions come from transportation, with domestic aviation driving a very large share of transportation emissions.

A clean fuel standard reduces the average lifecycle carbon intensity of transportation fuels over time, while allowing compliance through a flexible credit market. Fuels cleaner than the benchmark generate credits; fuels above it generate deficits, creating a durable, technology-neutral incentive for low-carbon alternatives (renewable diesel, biofuels with verified

lifecycle benefits, electricity, hydrogen, and sustainable aviation and marine fuels, as applicable). HIDOT's Plan specifically notes Hawai'i must avoid incentivizing "alternative fuels with high upstream emissions," reinforcing the need for lifecycle accounting and guardrails.

This policy model is proven and scalable. The Washington State Department of Ecology reports that in the first year of Washington's Clean Fuel Standard, carbon intensity fell 1.3%–more than double the 0.5% statutory requirement–and program participants generated 1,946,406 credits (each equal to 1 metric ton $CO_2e$ avoided). Washington's program targets a 45% reduction below a 2017 baseline by 2038. California's program—administered by the California Air Resources Board—and Oregon's Clean Fuels Program show similar market-based approaches can drive investment and cleaner fuel supply over time.

In addition to reducing emissions, a clean fuel standard can serve as a revenue-generating tool that supports Hawai'i's broader transportation and climate goals. In states with existing programs, credit market activity and compliance mechanisms have generated substantial economic value that can be reinvested locally. For example, Washington State reports that its clean fuel standard generated nearly 2 million credits in its first year alone, representing measurable emissions reductions and significant private-sector investment in clean fuels.

A Hawai'i Clean Fuel Standard could similarly generate revenue through fees, penalties, or credit auction mechanisms, with proceeds dedicated to priorities such as public transit, zero-emission vehicle infrastructure, sustainable aviation and marine fuels, rural energy resilience, and rebates or protections for households facing higher transportation costs. When designed thoughtfully, a CFS can reduce pollution while also strengthening energy security and funding equitable climate solutions.

To ensure a Clean Fuel Standard delivers real climate, health, and equity benefits for Hawai'i, implementation details will matter. According to HIDOT's 2025 Energy Security and Waste Reduction Plan, Hawai'i must be careful not to promote "alternative fuels with high upstream emissions" and should design policies that reflect the state's unique geography, import dependence, and neighbor-island realities. Strong sustainability safeguards, public reporting on credits and emissions reductions, and attention to affordability will be essential to maintaining public trust and maximizing the effectiveness of a CFS.

With aloha,

*Kris Coffield*

President, Imua Alliance

**Senate Committee on Transportation and**
**Senate Committee on Agriculture and Environment**

**February 17, 2026**

**SB 2999, Relating to a Clean Fuel Standard**

**Position: Support**

The Low Carbon Fuels Coalition is a non-profit trade association that represents the entire value chain of clean fuels industry. Our members include some of the leading companies and organizations that produce, supply and/or represent liquid, gaseous and electric fuels for all transportation sectors including on-road, aviation and marine, as well as large users of these fuels.

The Coalition can attest to the effectiveness of existing similar programs in California, Oregon and Washington, and therefore, supports HB 1986 in Hawaii. Real-world data shows that not only do these programs support greenhouse gas and pollution reductions and promote economic development through private investments, but do so without driving fuel prices.

The data shows no correlation between retail gasoline prices and credit prices, even while the existing programs have exceeded their carbon intensity targets due to the market-based policy design.

Based on the demonstrated success in other states, the Coalition is in strong support of SB 2999.

**Comments before**
**February 17, 2026**
**Senate Committee on Transportation and Senate Committee on Agriculture and Environment**

**OPPOSING**
**Senate Bill 2999**
Relating to "Clean Fuels" Standard

**Mike Ewall, Esq.**
**Founder & Executive Director**
**Energy Justice Network**
215-436-9511
mike@energyjustice.net
**www.EnergyJustice.net**

Aloha Honorable Committee members. Energy Justice Network is a national organization supporting grassroots groups working to transition their communities from polluting and harmful energy and waste management practices to clean energy and zero waste solutions. In Hawai'i, we've been working with residents, members and member groups since our support and involvement was first solicited in 2015.

**Please oppose Senate Bill 2999.**

**This bill would have the state violate the legal settlement in *Navahine F. v. Hawaii Department of Transportation*.** This settlement requires that the State achieve a goal of zero greenhouse gas emissions across all transportation modes within the State, including ground transportation and sea and air interisland transportation no later than 2045. This is not possible if biofuels or waste-based fuels are part of the mix, as they are not carbon free.

Calling it "clean fuel" or "sustainable aviation fuel" (SAF) does not make it clean. There is not enough land and water to grow a significant amount of biofuels in-state. The biotech industry keeps testifying in favor of biofuels bills because they know genetically modified enzymes and crops will be involved, risking biosecurity if grown or processed in-state. It is clear that most of this "clean fuel" will be imported big ag monocrop (mostly GMO) biofuels from the Americas, and that much of what would come from in-state is from toxic waste-to-fuels schemes like Aloha Carbon's plan to try to gasify construction and demolition waste in Campbell Industrial Park on O'ahu... using wood that the Hawaii Natural Energy Institute documented to have 200 times as much arsenic as clean wood.

There are no green alternatives for intercontinental flights and these fall outside of the *Navahine F.* settlement scope and the scope of state laws the settlement aims to enforce. Inter-island flights can best be decarbonized by switching to a combination of electric ferries and electric sea-gliders which can be powered by clean electricity sources like wind and solar. There is no need to be building infrastructure for differently dirty fuels that will involve companies that later lobby to prevent the transition to clean options we can start adopting now.

**Production will not be local:** As was discussed in the 1/29/2025 Joint Hearing on SB 995 before the Senate Energy and Intergovernmental Affairs and Agriculture and Environment Committees, the Department of Agriculture testified to the fact that there simply is not sufficient land or water to have a significant biofuels production industry within the state. This means that most of the production will come from the continent, predominantly the Midwestern states, and from South America, defeating the goal of establishing biofuels as a home-grown industry.

**Competition with food:** The same Senate hearing exposed how growing crops for biofuels in Hawai'i would take up land and water needed for the state's own food security goals to have more food grown in-state.

**Genetic engineering:** The Biotechnology Industry Organization regularly submits testimony in favor of biofuels bills, yet fails to be transparent about their motivation. Clearly, they expect to have genetically engineered crops and/or enzymes used for the production of supposedly "sustainable" aviation fuels. This raises many biosecurity concerns, as well as concerns over increased herbicide spraying, since most genetically modified food crops are modified to withstand increased herbicide use.

**Toxic waste streams as feedstocks:** At least two companies are pursuing goals of producing fuels in the state using contaminated waste streams like construction and demolition waste. This is terribly polluting and even if the toxic metals and dioxins/furans do not end up in the fuel, they'll end up in the air, water, and/or waste byproducts at the in-state production facilities being proposed. More on the toxics concerns below.

**Finances:** The rather costly fuels are not competitive and are inherently quite expensive. If they were truly clean, one could argue that the expense is worth it, but a state mandate would have to be stacked with multiple federal subsidies to make it remotely feasible. However, those federal subsidies are vanishing as we speak under the Trump administration and cannot be expected to carry the day.

**Faulty Greenhouse Gas (GHG) accounting:** Biofuels look like a climate solution only because of biases in carbon accounting systems and life cycle assessments. There is a long-standing controversary over whether biofuels production uses more energy than it produces. The incredible amount of fossil fuel resources, land, water, fertilizer, chemicals, and other production systems needed to replace fossil fuels is enough to raise the question over whether it even makes sense to replace fossil fuels with biofuels – fuels that, are still carbon based and will still release GHGs when burned.

The incentives would be based on assessing the fuels for their "lifecycle greenhouse gas emissions." There are many flaws and biases in greenhouse gas (GHG) accounting that cause plant-based (biomass/biofuels) and waste-based feedstocks to be assumed to be "carbon neutral," even though there is a credible scientific debate over this controversy going for over two decades. Some of the science shows biofuels such as corn-based ethanol to consume more fossil fuels than they displace. The very existence of a debate over this shows that the "net energy" of biofuels are close enough to 1:1 that there can even be a scientific dispute over it. If biofuels require about as much fossil fuel (to grow, process, and transport) as they displace, there is no point subsidizing them and building new infrastructure to support a system that is not really an improvement.

**Sustainable Aviation Fuel does not exist:** There is no clean or sustainable way to produce a burnable fuel from raw resources and turn it into air pollution when burned. It is inherently not sustainable or circular. There is one approach that comes close to being sustainable or circular, and that is the approach advanced by Feather Fuels and by Twelve Benefit Corporation, one of the companies testifying in favor of "clean fuels" bills. That involves using wind or solar electricity to pull carbon dioxide out of the air, and to also electrolyze water to obtain hydrogen, then use Fischer-Tropsch gas-to-liquids technology to turn the carbon dioxide and hydrogen into a burnable hydrocarbon fuel. This combination of very expensive and energy intensive technologies is rather experimental and has not been done at scale. It could be good to experiment with and prove up as a technology that could make sense in 20 years, but it makes no sense to use clean wind and solar energy on this approach, when wind and solar can decarbonize things much faster and more efficiently if used to replace the burning of oil, biofuels, trash, and trees in the state's electric grid, and then to eliminate oil and gas in transportation by electrifying that sector. More on this not being the right time below.

# Toxicity concerns

Biofuels are impractical and unaffordable to produce in-state. The main efforts to make "sustainable" aviation fuel in the state involve waste-based fuels. There are plans to gasify construction and demolition debris to make burnable aviation fuels on Oʻahu. This is part of an array of experimental incinerator-like technologies that aim to convert waste into fuels. These waste-to-fuels (WTF) technologies usually start with pyrolysis or gasification – technologies that, when the resulting gases are burned, are defined and regulated by EPA as municipal waste combustors (waste incinerators). Typically, these two-stage technologies will replace the second stage (burning the gases) with a liquefaction stage, to make liquid fuels to be burned elsewhere. This is known as Fischer-Tropsch gas-to-liquids technology, named after the two German scientists who developed the ability to make oil from coal by gasifying, then liquefying it.

These are toxic and dangerous technologies that are experimental and often fail both technically and economically. When fuels are burned off-site in land vehicles or for air travel, they are not subject to the sorts of air pollution controls that can be applied to a centralized facility with a single smokestack. Even when such a facility burns the gasified waste on-site with the full complement of air pollution control devices, waste incineration is still dirtier than burning coal for the climate as well as for most other air pollutants. This is even *with* all four air pollution control systems that waste incinerators should have (note that H-POWER's two older burners are missing half of these four control systems, though their third burner has all four).

Unlike coal, construction and demolition (C&D) waste is very heterogenous, which can be comprised of steel, concrete, brick, lumber, plaster, empty paint cans, asphalt, wire, shingles, and much more. Pyrolysis and gasification technologies do not work well on heterogenous fuels. They break down constantly and operate only in batches. These finicky technologies require very homogenous fuels. Even those trying to process scrap tires fail repeatedly, because tires are not homogenous enough for pyrolysis. Even the nation's top cheerleader for tire burning, a spokesperson for the Rubber Manufacturers Association, once stated that "scores of start-ups have tried and failed to make money from tire pyrolysis. The road is littered with the carnage of people who were trying to make this technology viable."

These technologies have been unable to operate at commercial scale, and typically are garage-scale pilot projects that go nowhere. This trend has led the nation's leading incinerator-promoting solid waste consulting outfit, GBB, to classify the technology as "high" risk due to "previous failures at scale, uncertain commercial potential; no operating experience with large-scale operations" (pyrolysis) and "limited operating experience at only small scale; subject to scale-up issues" (gasification).

Hawaiʻi has been targeted in recent years by quite a few fly-by-night companies aiming to cash in on state and federal subsidies to satisfy the desire for sustainable aviation fuels while making waste streams go "away." Companies like Aloha Carbon and Yummet prey upon uninformed public officials who don't have time to research the track record of this industry, the toxic hazards associated with it, or the better alternatives.

Regarding toxic hazards, please see this heavily-cited (92 footnotes) six-page overview I wrote on the toxic pollution issues associated with construction and demolition (C&D) waste incineration. While the paper focuses on direct incineration, many of the same principles apply, as the high temperature processes used in WTF technologies still release toxic metals while producing new toxic pollutants such as dioxins and furans, the most toxic chemicals known to science.

C&D waste contains many toxic ingredients. There are chlorine sources in wood treatment chemicals like pentachlorophenol, and in PVC plastics in C&D waste. Painted wood can contain lead and mercury, while treated wood can contain other toxic metals, namely arsenic, chromium, and copper. Testimony on House Bill 976 of 2025 from the Hawaii Natural Energy Institute (on pages 43-44 of the testimony packet), affirms high levels of arsenic, chromium and lead in C&D waste, with arsenic concentrations 200 times higher than clean wood. Their research also shows high levels of hydrochloric acid, copper and zinc fron C&D waste, but doesn't point out a significant conclusion about this – that numerous published studies show that copper and zinc serve as catalysts for dioxin formation. Dioxins are the most toxic chemicals known to science and are formed in processes like those used to make these "sustainable" aviation fuels, where you have hydrocarbons, halogens like chlorine, and medium-high temperatures that are perfect for dioxin formation. These ultratoxic chemicals rapidly bioaccumulate and concentrate in meat and dairy products where 92% of human exposure comes from. Even if these emissions are blown out to sea, they concentrate and come back in the form of seafood.

## Not the right time

**Prioritizing Conservation and Efficiency**

Transportation fuels should first be tackled by prioritizing a reduction in the need for unnecessary travel, then more efficient transportation. After prioritizing these, electrifying transportation is the best solution so that combustible fuels can be avoided entirely. Any system that relies on extraction of resources, burning them up, polluting the air, and having to dispose of wastes is not sustainable. For long-distance flights where electrification may not become possible, perhaps hydrogen has a role, but not until the electric grid is cleaned up and we have *extra* wind and solar available for truly green hydrogen production.

**No Such Thing as Transition Fuels**

Burnable fuels are not a long-term option, as they are not clean or sustainable, no matter whether they're "biofuels" or waste-based. Any such move is in-between the present and the arrival of clean, non-burn options. Such fuels are often called "transition" fuels. However, the concept of a transition fuel is that we can go from A to B to C, as if B helps us get to C. However, transition fuels have different infrastructure and their own economic weight that causes them to stand in the way of a future transition to clean options.

By the time we finish transitioning the energy sectors that we have clean, non-burn solutions for, long-distance air travel will probably have viable solutions we can focus on to complete the job. However, investments in "differently bad" fuels are an economic investment dead-end, requiring another transition later, wasting time and money needed to do the proper transitions in other energy sectors. In fact, the notion of "transition" fuels is a false one, since it entails investing in infrastructure that could last for 30+ years. No company developing so-called "transition" infrastructure, and trying to amortize their investment, is going to step aside in 5-10 years when something cleaner comes along. They're going to fight to stop the transition to cleaner options to protect their investment. In this sense, it's dangerous to steer resources into false solutions such as waste-based burnable transportation fuels.

**Prioritizing the Energy Sectors That Have Clean Alternatives**

There are three sectors of energy consumption: electricity, transportation, and heating. Transportation can be broken down into land, sea, and air. Heating is broken down in federal energy reporting as industrial, residential, and commercial/institutional sectors of use.
Just as there are preferable non-burn solutions for every waste management need, there are clean non-burn solutions for nearly every energy sector, though long-distance commercial passenger aviation is not there yet.

Cleaning up these energy sectors should start with solutions we already have, without trying to solve the most unsolvable sector by replacing one type of burnable fuel (petroleum-based aviation fuel) with differently bad burnable fuels (crop-based biofuels) or even more hazardous types of burnable fuels (waste-based fuels).

Since the way to clean up the transportation and heating sectors is to electrify them so that they can run on wind and solar without burning anything, it's critical to clean up the electricity sector first, and faster, since electricity demand will grow as the other energy sectors are electrified. Electricity production is easiest to fully transition to non-burn technologies – mainly solar and wind with energy storage, which are becoming the cheapest options over time. The state's renewable portfolio standard (RPS) aims to transition the electricity sector to "renewable" sources by 2045, but still counts some combustion sources as renewable – the worst of them being solid fuel combustion (burning of trash and trees). SB 2092 aims to clean up the RPS starting by removing solid fuel combustion sources, which will speed up the implementation of solar, wind, and energy storage.

The heating sector is dominated by industrial heating, which is increasingly possible to electrify, while residential and commercial space heating and cooking needs are easily electrified. Electric stoves and heat pumps for space heating can be incentivized.

The transportation sector is easily electrified for land-based travel. International shipping is now possible with electric ships (see also here and here). The hardest sector to make non-burn is long-distance air travel, though inter-island air travel can now be electrified with sea gliders, as Hawaiian Airlines has been exploring.

While waiting for good non-burn solutions to powering long-distance air travel, let's focus where we have good alternatives:

1) end combustion in the electricity sector, which is mostly oil in Hawai'i, but also some burning of trash, trees, and biofuels; replace with conservation, efficiency, solar, wind, and energy storage.
2) electrify any heating needs... most use is industrial sector, but also help transition residential or commercial sectors where cooking and space heating is done with combustible fuels (mainly gas made from oil).
3) end combustion use for land-based vehicles by reducing vehicle use, having better (and fare-free) electrified public transit, and electrifying other land vehicles.
4) replace inter-island air travel with electric sea gliders, and electrify shipping, which is now possible.

The 2024 *Navahine F. vs. Hawaii Department of Transportation* settlement requires that the state come up with a plan to reach zero emissions in the transportation sector, which requires doing the same in the electricity sector. This bill would violate that requirement by advancing carbon-based fuels instead of

investing in the transition needed in the electricity and (certain) transportation sectors to decarbonize properly and in the right order.

Attached is a resolution adopted by the Democratic Party of Hawaii in 2024 in support of an alternatives study, called for in SB 2369, which would look at non-burn alternatives for the transportation and other energy sectors. Such a study would be more appropriate and in line with the state's greenhouse gas (GHG) reduction goals and legal requirements.

Also attached are our 8/31/2025 comments on HDOT's Draft Energy Security & Waste Reduction Plan which explain how greenhouse gas accounting for biofuels is gamed and unreliable, how the plan is insufficient in many ways, not to mention unaffordable, and how the plan will be ridiculously expensive and environmentally harmful if relying on burnable "alternative" or "sustainable" fuels.

# Democratic Party of Hawai‘i Resolution Adopted May 18, 2024

**2024-15: Urging the Hawai‘i State Energy Office to Study Non-Burn Alternatives to Combustible Fuels**

Whereas, It is important to use Hawai‘i state taxpayer funds wisely to create the most good without speculative investments, unnecessary subsidies, or promotion of energy technologies or fuels that conflict with the state’s climate change goals, or the peoples’ constitutional right to a clean and healthful environment under Article XI, Section 9 of the Hawai‘i State Constitution; and

Whereas, Energy consumption sectors tracked by the U.S. Energy Information Administration are electricity, transportation, and industrial, commercial and residential heating; and

Whereas, Technology exists to meet the needs of the electricity sector using conservation, efficiency, solar, wind, and energy storage, which can be made as firm as needed with added storage capacity; and

Whereas, Residential and commercial cooking space and water heating needs are easily electrified with existing technology, including ground- and air-source heat pumps and hybrid electric water heaters; and

Whereas, Industrial heating needs are increasingly possible to meet through a combination of concentrated solar, electricity, and—if necessary—green hydrogen sources from wind and solar; and

Whereas, Land-based transportation, even heavy trucking, can now be fully electrified and powered on clean, non-burn, electricity sources; and

Whereas, Ocean-based transportation is now possible to fully electrify, including international cargo ships with batteries, and some with stationary wind masts; and

Whereas, Interisland air travel is possible with electric sea gliders, as Hawaiian Airlines is exploring, while intercontinental air travel is the one sector that is hardest to convert to clean energy, though Airbus aims to bring to market the world’s first hydrogen-powered commercial aircraft by 2035; and

Whereas, Combustible carbon-based fuels release greenhouse gasses as well as other harmful air pollutants, and the production of burnable fuels has many other environmental implications, including the use of land for fuel instead of food, water and soil depletion, spread of genetically modified organisms, and—if using waste streams to make fuel—toxic chemical releases and solid waste byproducts; and

Whereas, Technologies to turn waste into fuels are highly speculative, controversial and polluting, and typically fail to operate at a commercial scale, usually falling apart technically, economically, or both; and

Whereas, Climate impacts of biomass and waste-based biofuels can be close to or greater than those from fossil fuels, especially where trees are cleared to grow bioenergy crops; and

Whereas, Investing in “transition” fuels only builds up an economic interest that makes it harder, politically and economically, to move to the next step where burnable fuels are ultimately replaced; and

Whereas, It is wise to spend public funding first on clean, combustion-free solutions that already exist, focusing on energy sectors where those solutions are not yet fully implemented; therefore be it

*Resolved*, That the Democratic Party of Hawai‘i urges the Hawai‘i State Energy Office to conduct a study of the different energy consumption sectors to determine which can be most quickly and cost-effectively decarbonized through additional public investment in combustion-free alternatives; and be it

*Ordered*, That copies of this resolution shall be transmitted to the offices of the Governor and Lieutenant Governor of the State of Hawai‘i, the Hawai‘i Chief Energy Officer, and all members of the Hawai‘i State Legislature who Democrats.

Energy Justice Network

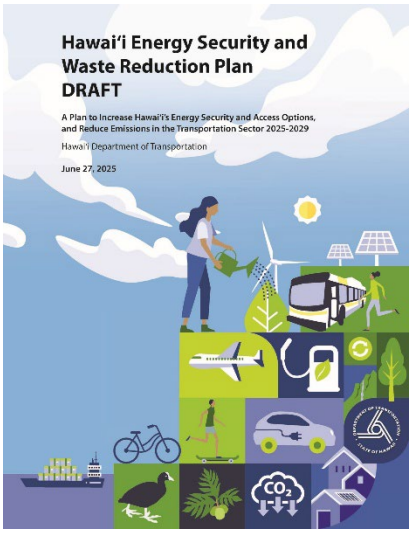
www.EnergyJustice.net

Kōkua nā ʻĀina

CLEAN ENERGY & ZERO WASTE

# Comments on HDOT's Draft Energy Security & Waste Reduction Plan

## 8/31/2025



Aloha HDOT:

We submit these comment to express our concerns over the fiscal and environmental consequences of the Hawai'i Department of Transportation (HDOT) Draft Energy Security & Waste Reduction Plan (hereinafter "ESWRP"). We urge HDOT staff, consultants and stakeholders, including members of the Hawai'i Youth Transportation Council to read these comments in full, and to spend time digging into the references and footnotes, as there is much to understand about the wide range of false solutions being advanced by this draft plan.

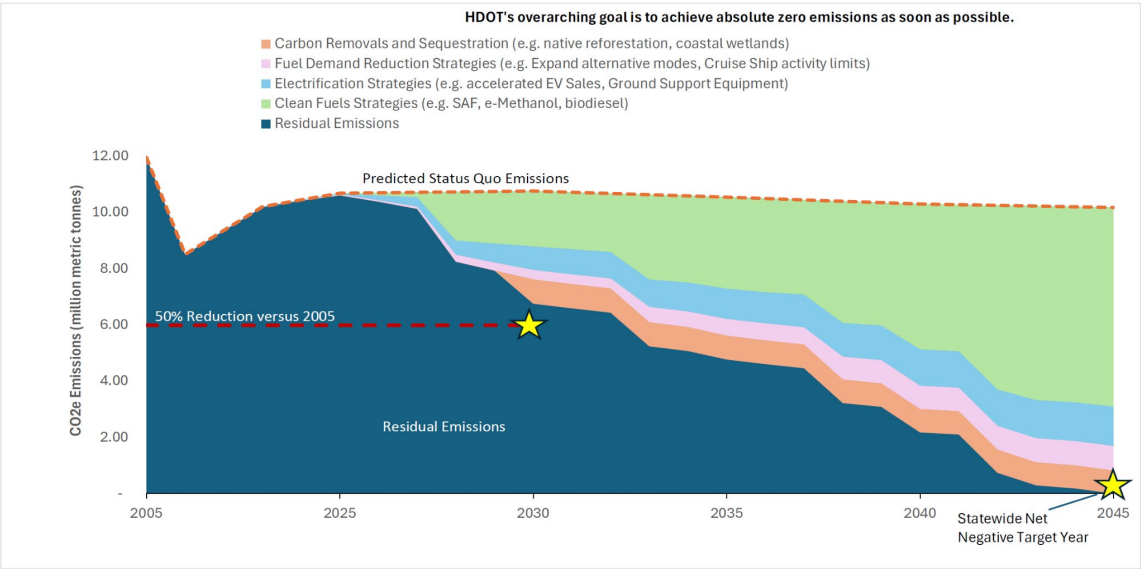
The plan's objective is to meet the goal of zero greenhouse gas (GHG) emissions from the state's "ground transportation and interisland sea and air transportation" systems by 2045, in accordance with state law (HRS § 225P-8)[1] and the *Navahine F. v. Hawai'i Department of Transportation* court settlement.[2]

Sadly, the plan falls short of this goal and advocates for harmful false solutions and for a "double transition" approach that will be far more expensive than necessary by making two (or three?) major industrial transformations within 20 years instead of one, more thoughtful, transition.

**An environmentally-friendly plan should rely on about 40% demand reduction and 60% electrification, which requires that the state's electric grids' capacities be expanded and that combustion-based generation be eliminated.**

**Instead, as the chart below shows, the plan relies about 70% on burnable "clean fuels" (in green) which are far from clean (some are even worse than the fossil fuels they'd replace), only 14% electrification (light blue), only 8% demand reduction (pink), and the remaining 8% is a shortfall (orange) that HDOT wants to make up with controversial "reductions" elsewhere, in violation of the legal settlement.[3]** The plan's text states that the shortfall is actually 10%, but the chart in Figure 3-1 shows it to be closer to 8%.[4]

Figure 3-1. Transportation 2045 Net-Negative Emissions Strategy




[1] https://law.justia.com/codes/hawaii/title-13/chapter-225p/section-225p-8/
[2] https://statecourtreport.org/sites/default/files/2024-07/first-circuit-court-of-hawai-i-joint-stipulation-and-order.pdf
[3] Hawai'i Department of Transportation, "Draft Energy Security & Waste Reduction Plan," (hereinafter "ESWRP") June 27, 2025, p.27, Figure 3-1. https://hidot.hawaii.gov/wp-content/uploads/2025/06/Draft-ESWRP-6.27.25.pdf
[4] ESWRP, page 28 states: "The combined strategies are projected to achieve a 90 percent reduction of baseline emissions in 2045, with the remaining 10 percent reduction coming from hard-to-decarbonize sectors addressed by future carbon removal projects."

**Let's not plan to fail**

To fulfill legal mandates, the plan must go all the way to zero greenhouse gas emissions by 2045. No plan can guarantee success, but it has to be designed so that it is possible. It's not adequate to start off the plan with this in the first paragraph:

> "A sustainable and just intermodal transportation system is one that is ***largely*** powered by clean and locally sourced power, including electricity fueled by renewable energy, ***low-carbon fuels***, and people walking or rolling" (emphasis added).

Furthermore, in the second paragraph of the substance of the plan, on page 14, it states that the plan "aims to lead the state to **net**-negative emissions **by 2045 and ultimately** zero emissions in the transportation sector **as soon as possible**" (emphasis added).

"Net" meant "not" (hence the need to meet shortfalls of the mandated zero emissions with reductions outside of the transportation sector), and the "ultimately" (implied to be *after* 2045) reaching zero emissions "as soon as possible," is an admission that this plan aims to push the zero emissions target past 2045, the year mandated in the state law and enforced in the settlement agreement.

Page 90 of the plan states:

> "…the reality that currently available SAF [sustainable aviation fuels] has significant remaining lifecycle GHG emissions. Because of these hurdles, despite HDOT's and stakeholders' expected best efforts to reduce GHG emissions, it is anticipated that **achievement of absolute zero GHG emissions will occur after 2045**" (emphasis added).

It is good to see the honesty, but HDOT is still required to have a plan that lands at zero by 2045. As discussed later, this means that sustainable aviation fuels (SAF) must go, as there is not adequate time or money to waste on false solutions that are not zero GHG emissions.

HDOT cannot start off with a plan that expects to miss its mark by 8-10%. Since the "clean" fuels and electricity that make up about another 84% of the plan are not zero GHG emissions sources, the draft plan would miss the mark by far more than 8-10%.

Air travel comprises over half of the GHG emissions this plan aims to reduce. The plan expects 62% of air travel emissions reductions to come from "traditional SAF" by 2045.[5] SAF is not zero emissions and could easily have greater emissions than the jet fuel currently used. Planning for "traditional" SAF to still be used by the 2045 goal is also not in line with the plan's intention to move from "near-term" biofuels options (synonymous with "traditional SAF") to long-term electrofuel options that supposedly have lower or zero GHGs.

[5] ESWRP, p.69, Table 3-3.

**Avoid greenwashing language**

"Clean fuels" and "sustainable aviation fuels" are inappropriate terms. To be more credible and objective, we recommend using "alternative fuels" or "alternative aviation fuels" so that the name itself is not pre-judging that the fuels are clean or sustainable when the plan (in appendix F) even addresses how most of these fuels have downsides that make them not so clean or sustainable.

Similarly, terms like "zero-carbon alternative fuels" (p.18 of the plan) should not be used since nearly every burnable fuel contains carbon and releases it when burned. Fuels that do not contain carbon have other GHG impacts associated with them such as nitrous oxides from burning ammonia, or the indirect effects of leaked hydrogen, which helps methane persist in the atmosphere. When people hear "zero carbon," it is typically understood to be synonymous with "zero GHG impacts."

All uses of the words, "clean," "sustainable," or "zero" should be searched and reviewed for objectivity. Similarly, assumptions that "renewable" means "clean" or "zero GHG emissions" must be reviewed, as it does not mean that when combustion-based systems are used. The state's Renewable Portfolio Standard (RPS) law counts as "renewable" the burning of "biomass" (trash, trees and other solid waste and crops), liquid biofuels, and biogas (toxic landfill gases and anaerobic digester gas), none of which are clean or zero-GHG emission, and some of which are worse than the fossil fuels they replace. Nearly half of the energy from the burning of trash comes from fossil fuel sources like plastics made from oil and gas. Even once the 100% renewable electricity by 2045 RPS goal is met, assumptions that this means electricity is GHG-free will be false unless these combustion sources are eliminated from the electric utility's portfolio.

As the opening of the 2023 Cerulogy report, "Scrutinising the future role of alternative fuels in delivering aviation decarbonisation" states:

> "Readers who are used to the discussion of alternative aviation fuels might have noticed that… we have studiously avoided using a term that has become standard in the industry in recent years – SAF, standing for Sustainable Aviation Fuel. Instead, we prefer to say 'alternative aviation fuel'…. The reason that we prefer not to use the term SAF is because sustainability is a characteristic of a fuel pathway that is at least somewhat subjective (i.e. it depends on which sustainability criteria are considered important), that may change over time (sustainability can be affected by variables outside the control of a fuel producer such as deforestation rates), and that is at least somewhat scale-dependent – one might feel differently about devoting a couple of farms to bioenergy cropping than devoting half of the agricultural area of Europe."[6]

The report goes on for two pages on this deliberate use of language, and we encourage HDOT to take it to heart as well.

[6] Malins, C., Scrutinising the future role of alternative fuels in delivering aviation decarbonisation: Part 3 – the pathway to decarbonised aviation," October 2023. https://www.aef.org.uk/uploads/2023/11/Cerulogy_Alternative-fuels-in-aviation_Part-3-decarbonisation_Oct2023-1.pdf#page=10

**Discuss public health impacts in a balanced way**

It is also important to provide balance and not selectively present only benefits and not harms when discussing energy sources that have both. Page 49 of the plan states: "Biodiesel also significantly lowers sulfur oxide (SOx) and particulate matter (PM) emissions, improving air quality for nearby residents." There is no mention in the body of the report that other pollutants increase, such as nitrogen oxides (NOx) that trigger asthma attacks and volatile organic compounds (VOCs) that can cause cancer. One must reach into Appendix F on page 150 of the PDF to find out that there could be increased NOx emissions from biodiesel "in some cases" – and no mention of other pollutants that could increase, or of the health consequences of exposure to them.

Putting only benefits up front and burying the harms deep in an appendix is a form of greenwashing and misleads readers. The entire document has only one mention of asthma, one mention of respiratory disease and two mentions of cardiovascular disease (in Appendix F on pages 150 and 152 about biodiesel and renewable diesel). Both of these sentences speak in terms of diseases that would be avoided when these biofuels are burned in place of fossil fuels. However, asthma can be aggravated by increases in NOx from biodiesel burning. While there is a slight admission of the possibility of NOx increasing, there is no corresponding statement that it could aggravate asthma… only that respiratory disease could be alleviated. There are zero mentions of cancer or other public health impacts associated with some of the solutions in the plan.

We expect one-sided discussion of topics from corporations advancing their interests, but not from a public agency that is charged with implementing a plan that should benefit the environment and public health.

**"Transition" fuel approach is politically unrealistic and makes high costs more extreme**

The plan's "transition" approach is that it aims to build up a biofuels industry that will lobby against the subsequent transition to electrofuels because private corporations do not want to finance and build 30+ year infrastructure just to tear it down in 10-15 years.

In recent years, there has been a phalanx of lobbyists pressing the state legislature to subsidize "clean fuels" and "sustainable aviation fuels." This includes airlines, the PAR oil refinery, biorefiners, electric utilities, agribusiness interests, the biotechnology industry trade association, fledgling startups aiming to turn waste streams into fuels, and some nonprofits who are aligned with these interests. Should they succeed and build out this industry to grow, import, and refine biofuels and waste-based fuels, which will take several years just to start up, it would make no sense for them to throw out these investments and tear down all of this infrastructure just to facilitate a transition to "electrofuels" in the latter portion of the 20-year plan period.

It can easily take 5-10 years to get a major new infrastructure project like a biorefinery financed and built. Financing typically involves a 10-20 year investment. The lifetime of the infrastructure can be 20-30 years. No business person will go along with tearing down their investment half-way through its operational life if they can avoid it.

Building up a biofuels industry with the intention to switch gears to an electrofuels industry means that all the economic interests invested in the biofuels buildout will use their profits and political power to lobby against the next transition.

Despite this glaring political problem, the plan aims to make two transitions, if not actually needing a third transition after 2045.

The plan would have state taxpayers subsidize building up "low-GHG" biofuels industries in the short term just to tear them down within 20 years to replace them with other burnable "synthetic" and "electrofuels" that are terribly inefficient and purport to be zero GHG, but are not.

As the table below, from the plan, demonstrates, between 2030 and 2045, the plan would build up, then aim to dismantle 35% of the biodiesel industry, 65% of the ethanol industry, and 72% of the renewable LNG industry – both the supply side, as well as the storage and transportation infrastructure using these fuels unless the same infrastructure can run on the electrofuels that replace them.

**Table F-1. Projected Alternative Fuel Demand by Type, Year, and Sector**

| Fuel Type | Estimated Demand (2030) | Estimated Demand (2045) | Applicable Sectors |
|---|---|---|---|
| Biodiesel | 20 million gallons | 13 million gallons | Ground (heavy-duty) |
| Renewable Diesel | 19 million gallons | 52 million gallons | Ground and Marine |
| Ethanol | 17 million gallons | 6 million gallons | Ground (light-duty) |
| Renewable Gasoline | Not included | Not included | Ground (light-duty) |
| Renewable LNG | 32 million therms | 9 million therms | Marine |
| SAF | 410 million gallons | 600 million gallons | Aviation |
| eSAF | No demand in 2030 | 110 million gallons | Aviation |
| BECCS SAF | No demand in 2030 | 36 million gallons | Aviation |
| e-Methanol | No demand in 2030 | 58 million gallons | Marine |
| e-Ammonia | No demand in 2030 | 62 million kg | Marine |
| Green Hydrogen | No demand in 2030 | 1.6 million kg | Marine |

Many examples throughout the plan spell out this intent to make at least two transitions:

Page 24: "Develop the infrastructure and supply chain for bio-/renewable diesel and renewable LNG in the short term, enabling intra- and inter-state vessels to transition to these low-carbon fuels, while planning for a long-term shift to alternative clean fuels such as green methanol, green ammonia, or green hydrogen to fully decarbonize marine operations."

Page 30: Fig 3-3:

2. **Cruise Vessel:** Non-home ported vessels transitioning to bio-LNG near term and e-fuels longer term
3. **Interisland Operation:** 100% biodiesel by 2030, transitioning to e-fuels by 2045.
4. **Inter-state Operation:** 70% bio-LNG by 2030, shifting to e-fuels by 2045.
5. **Assist Tugs :** 100% biodiesel by 2030, moving to zero emissions by 2045.

Page 49: "Clean marine fuels include biofuels (such as biodiesel or renewable diesel), methanol, ammonia, hydrogen, and bio- LNG, each of which has different technological requirements and operational impacts. Renewable biodiesel offers a drop-in solution for existing diesel engines with minimal modifications, making them an attractive early-stage emissions reduction strategy. In

contrast, LNG, methanol, ammonia, and hydrogen, require engine modifications or entirely new vessel builds, making them longer-term solutions."

Page 49: "For intra-state marine vessels, the recommended transition strategy starts with low-carbon drop-in fuels such as biodiesel and renewable diesel in the near term, with a goal of fully adopting these fuels across intra- state operations by 2030. Beyond 2030, the transition is expected to shift toward e-methanol and e-LNG, with ammonia adoption beginning in 2035 and green hydrogen introduced post-2040. These alternative fuels will require new vessel designs or engine modifications, making their adoption more complex and capital-intensive."

Page 52: "In the short term (by 2030), efforts should focus on biodiesel infrastructure, followed by LNG, e-methanol, and ammonia bunkering by 2035, and ultimately hydrogen infrastructure post-2040."

> "Given the higher costs of biodiesel, bio-LNG, e-methanol, ammonia, and hydrogen; financial incentives are critical to encourage adoption." (ESWRP, p.52)

The high costs of these fuels are admitted throughout the plan, more so in the appendices. Requiring two or more transitions will make an expensive plan far more expensive. Alternative aviation fuels being explored are projected to cost about 2-5 times as much as fossil jet fuel, and this approach of making two transitions within two decades will only magnify the costs to taxpayers and consumers.

Most of these "longer-term solutions" are not genuinely zero GHG emission in their burning or lifecycle, which could necessitate a third transition to full electrification with non-burn renewable electricity sources. It would make more sense to go directly to these solutions as soon as they can be made available, and to focus on what is possible on our way there, such as conservation and efficiency strategies, cleaning up and expanding the grid, and electrifying transportation where we can, as soon as we can.

**Ensuring Proper GHG Accounting & Modeling**

<u>Counting emissions from electricity generation</u>

It is unclear whether and how GHG emissions from the electricity sector will be counted. The plan seems to state it both ways. On one hand, it seems as if they'll be counted:

Page 80 states:

> "This GHG inventory boundary includes the following two sources of indirect emissions:
>
> - Emissions from EV electricity consumption until the electricity grid becomes 100 percent renewable
> - Upstream emissions from the production of alternative fuels
>
> The inclusion of emissions from electricity production transportation emissions is one deviation from the statewide DOH inventory approach. Because of the carbon-intensive electrical grid in Hawai'i, it would be disingenuous for this Plan to assume

zero GHG emissions from EVs. Therefore, electricity emissions from EVs and other electric non-road equipment are quantified in this Plan."

Page B-12 reinforces this: "the baseline emissions projection includes emissions from electricity generation needed to charge EVs. …electricity grid emissions from EVs and equipment were considered in assessing the impact of electrification on the HDOT emissions inventory."

As the first bullet above states, emissions will be counted from EV electricity *until* the electric grid becomes 100% renewable. This notion is repeated on page 84, where it states "Emissions from EV electricity consumption will be included in this Plan until the electricity grid becomes 100 percent renewable."

This assumes that "renewable" energy sources are not releasing GHGs. In fact, trash incineration (like the H-POWER incinerator on Oʻahu) releases 65% more GHGs per unit of electricity produced than a coal burning power plant, and nearly half of those emissions are from the burning of fossil fuel-derived plastics. Burning trees, as Mahipapa, LLC does on Kauaʻi, and as Hu Honua has been trying to do in Pepeekeo on Hawaiʻi Island for nearly two decades, releases 50% more GHGs per unit of energy than a coal power plant does. Biofuels and biogas combustion are also not without their own GHG emissions. **"Renewable" does not mean GHG-free. It is imperative that <u>all</u> GHGs are counted, including from "renewable" sources.**

Whether electricity emissions are counted at all seems to be contradicted on page 29, where it states, "EVs are assumed to have zero emissions in transportation," and on page B-11:

> **"Exclusions**
>
> This Plan is written with the assumption that, for purposes of tracking against net-negative and interim GHG reduction targets, transportation emissions are defined using a similar basis as the DOH GHG Inventory. In that inventory, transportation emissions are limited to the fuels consumed by ground vehicles, aircraft, and watercraft. The following briefly describes excluded sources:
>
> - **Upstream impacts of fuel production**, which are included in the Industrial Process and Product Use (IPPU) sector or **excluded entirely for fuels produced outside Hawaiʻi**.
> - Like fuels, **production of concrete, asphalt and steel** is covered under IPPU or **excluded for materials from outside Hawaiʻi**.
> - **Electricity generation**, which is a portion of the Energy sector" (emphasis added).

Is this last bullet really stating that electricity generation will not be counted, even for EVs, contradicting the prior statements in the plan?

The first bullet also contradicts a statement from page 80, which correctly indicates that upstream impacts of fuel production must be counted, even for the bulk of the biofuels that are imported. Page 80 states:

> "The other deviation is the inclusion of upstream emissions from the production of alternative fuels. Clean fuels and other alternative fuels vary widely on lifecycle GHG impacts, and **it is very important that this Plan not incentivize use of alternative fuels with high upstream emissions, assume all clean fuels result**

> **in zero anthropogenic emissions, or ignore any shift of GHG emissions from Hawai'i tailpipes to international fuel production and processing**. Therefore, similar to the approach with electricity, the reduction pathways in Chapter 3 include pro-rated reductions to account for the estimated lifecycle impacts of fuels. For example, a shift of a group of vehicles from petroleum diesel to biodiesel is not illustrated as a 100 percent reduction in emissions in this roadmap" (emphasis added).

Is the use of the term "anthropogenic" implying that "biogenic" emissions can be ignored?

Counting Refrigerants

Page 22 of the plan dismisses refrigerants as negligible:

> "HDOT acknowledges that there are other GHG pollutants such as hydrofluorocarbons and perfluorocarbons being emitted as a result of transportation such as leakage from vessel and vehicle air conditioning systems. However, these are outside the boundary of the emissions inventory and are also expected to be quite minimal compared to combustion emissions from aviation, marine, and ground transportation vehicles and equipment, and thus negligible."

This should be reconsidered in light of the following:

- Older mobile air conditioning systems may not be factory sealed.
- Unlike stationary units, they get jostled a lot, making leaks inevitable. This study on R134a emissions from vehicles may be useful.[7]
- Refrigerants historically have very high global warming potentials (GWP). R134a was the norm in systems and has a high GWP of 1,526 over 100 years (meaning that it is 1,526 times as potent as $CO_2$ over that time frame), and a GWP of 4,144 over 20-years, which is a more relevant time frame, and the time frame of this policy.
- Most passenger vehicles built in 2025 use R1234yf instead of R134a. R1234yf is an HFO with an ultra-low global warming potential (GWP100 is less than 1 in AR6), however larger vehicles and trucks have not all changed over. While the amount of R134a will be decreasing over the years, R1234yf produce trifluoroacetic acid (TFA), a single-chain PFAS, which is of greater concern than its GWP value.[8] R1234yf completely breaks down into TFA in 7-10 days' time, which means local concentrations of that "forever chemical" will increase. TFA is being regulated in the EU, but I think the U.S. does not yet recognize it as something to worry about.
- DIY vehicle air conditioner recharging is an activity that should be regulated. Discharging a can of R134a into a leaky system will just cause that R134a to be emitted. Since systems don't necessarily need a whole can, people are likely to throw away partial cans, resulting in contents being expelled into the atmosphere. One way of lowering the environmental impact is to require cans of refrigerant to be filled with "reclaimed," not "virgin," refrigerant. In Washington State, they have banned the use of all small containers (or DIY) of automotive refrigerants. They did that because the R134a in the cans always left over a little bit, and the collective impact of those heels was significant.

[7] https://pubmed.ncbi.nlm.nih.gov/11878368/
[8] https://naturalrefrigerants.com/experts-sound-the-alarm-about-rising-tfa-levels/

- New York and California have programs relating to refrigerant recovery and recycling.[9,10] In New York, Part 494 bans the use of small containers of automotive refrigerant containing virgin substances effective January 1, 2027.
- In New York State's 2021 HFC emissions inventory, 15.9% of HFC emissions were from transportation HVAC (which does not include transportation refrigeration). This is more than residential HVAC emissions (10.9%) and commercial HVAC (13.3%), although less than commercial refrigeration (26.8%) and the general category for foams and propellants (29.8%). If Hawaii hasn't done an HFC inventory, the plan should not assume that transportation HVAC emissions are negligible.
- California had a program that charged a $10 deposit on the DIY cans, but I see that program has been discontinued, in favor of another one, which pays up to 90% of the cost of professional automotive AC repair, for income-eligible residents.

Policies that shift more residents away from DIY cans and toward getting professional help with their automotive AC systems would have long-term benefits. Most shops have a piece of equipment that automatically recovers refrigerant from vehicles, cleans the refrigerant, tests the system for leaks, and recharges the refrigerant (and oil) to precisely the right amount. This is the best practice for long-term vehicle maintenance with environmental benefits for everyone else.

Global warming potentials (GWP)

Page 22 states:

> "Using global warming potentials (GWP), emissions from these gases are converted to CO2e in this report. Only CO2e values are presented, as they account for all three GHGs in a standardized measure, with CO2 comprising the largest share of emissions from the included source categories. All GHG emissions are reported in metric tons."

GWPs are published by the International Panel on Climate Change (IPCC) through large "Assessment Reports" that come out about every seven years. The most recent data is from IPCC's Sixth Assessment Report (AR6), which was released in 2021. The plan provides GWPs for 20-year and 100-year time frames, where 20-year GWPs are more appropriate if we're to avoid climate change tipping points.

Is this plan using AR6 20-year GWP values? Will GWPs be updated as the Seventh Assessment Report (AR7) comes out in 2029 and when future reports come out?

The GREET Model: Underestimating Climate Impacts of Biofuels

Page 57 states that "emission factors for these fuels are sourced from the GREET Well-to-Wheel (WTW) Calculator (2022 version)."

"GREET" is the Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) model, a life-cycle analysis tool that calculates the direct greenhouse gas emissions from the production and use of various transportation fuels, such as ethanol and biodiesel.

[9] https://dec.ny.gov/sites/default/files/2023-12/part494expressterms2023public.pdf
[10] https://ww2.arb.ca.gov/resources/fact-sheets/small-containers-automotive-refrigerant-consumer-requirements

While mentioned only once in the plan, the use of the GREET model is pivotal, as it is proposed to be used as the measuring tool with which different burnable fuels will be considered to be reducing GHG emissions from the transportation sector.

A deciding factor in whether many biofuels are better or worse for the climate than the fossil fuels they replace is indirect land use change (ILUC). Through GREET, ILUC estimates for crop-based fuels are provided by the Global Trade Analysis Project BIO (GTAP-BIO) model which estimates the area of land converted during biofuel production.[11]

Leading climate and biofuels experts have written up a scathing and thorough critique of the GTAP model and how it vastly understates the impact of biofuels on climate change by downplaying ILUC. Authors include Yale professor Steven Berry, who has served as a consultant for the California Air Resources Board relating to ILUC from biofuels, and Princeton Senior Research Scholar Timothy Searchinger, who authored some of the landmark critiques of biogenic carbon neutrality assumptions. They write that "GTAP lacks a credible economic foundation" and "is particularly unable to credibly evaluate land use changes."[12]

In GTAP, "estimated ILUC carbon losses from a gallon of corn ethanol and soybean biodiesel are extremely low, meaning there is little carbon cost for diverting even vast areas of prime farmland to biofuel production."[13]

"Of thousands of economic parameters, only a small number claim to have any direct, empirical basis. Of these, few of the cited empirical studies make any use of credible techniques for distinguishing correlation from causation and, most fundamentally, supply from demand."[14]

"We also review how additional, empirically unsupported decisions added to the model since the first version used for CARB have further reduced the estimated ILUC. As an example, the model makes a pure assumption, without any supporting economic analysis, that most new cropping area will be supplied not by expansion of cropland but by cropping existing cropland more frequently. This assumption also contradicts actual experience in the U.S."[15]

ILUC, according to these authors, results in emissions that are roughly 3 to 4.5 times the emissions of the fossil fuels that the ethanol or biodiesel is replacing. However, only 10% of these average emissions are accounted for in GTAP's ILUC estimate used by CARB, and the version used in GREET is even lower. The authors point out that GTAP, as used in GREET, would claim that all the cropland in Iowa can be diverted to biofuel production – or to any other use – with almost no effect on global land use elsewhere and almost no resulting climate consequences.[16]

The models incorrectly assume that converting pasture to cropland will not lead to deforestation to replace the pasture.[17]

Regarding some of the simplistic assumptions made in the model, they write: "This choice is understandable as a research strategy, but it does not produce a model that can be treated

[11] https://www.epa.gov/system/files/documents/2022-03/biofuel-ghg-model-workshop-gtap-bio-model-2022-03-01.pdf
[12] Berry, S., Searchinger, T., & Yang, A., "Evaluating the Economic Basis for GTAP and Its Use for Modeling Biofuel Land Use," Yale Tobin Center for Economic Policy, March 19, 2024. https://www.energyjustice.net/fuels/gtap.pdf
[13] *Id.* at 1.
[14] *Id.* at 2.
[15] *Id.* at 3.
[16] *Id.*
[17] *Id.* at 7.

seriously as a policy tool."[18] They later point out that GTAP "appear[s] to be picking parameters to fit a narrative."[19]

Their conclusions include the following:

> "To summarize, the structure of the economics of the model produces physically impossible results. Even if the economics were reliable, the imposed adjustment factor generates an inconsistent result and lower ILUC."[20]

> "GTAP is generating results that project the lost carbon from land to generate additional crops for biofuels is only a very small fraction of the average carbon lost to produce these crops in the past. Only with these large reductions in ILUC can a model even project greenhouse gas reductions from these biofuels relative to using fossil shows. By contrast, as shown in Table 1, using this average carbon loss would indicate that crop-based biofuels do not come close to reducing greenhouse gas emissions from transportation over 30 years."[21]

<u>The ACERT Model</u>

Page 70 of the plan has a sidebar called "Lifecyle Emissions Analysis" (same title as the one mentioning GREET on page 57) that states:

> "This emission inventory considers the use of sustainable aviation fuel as a clean fuel. To determine the emission reduction potential of SAF, an emission reduction factor was established by comparing the emission factor SAF to that of kerosene jet fuel (KJF). For example, KJF has a baseline emission reduction factor of 0 percent and SAF has an emission reduction factor between 65 and 80 percent. Conservatively, SAF was assumed to start at 65% reduction in 2028 and scale up reduction by 5% every five years through 2045. Note that these are some of the preliminary reduction factors assumed for this version of the report and they will be further refined in the final version."

We ask that HDOT please respond to us to let us know what model was used to come up with these assumptions.

Elsewhere on the same page is mention of the "Airport Carbon And Emission Reduction Tool (ACERT)" which is an apparent misnaming of the "Airport Carbon and Emissions Reporting Tool."[22] The ACERT model's assumption on GHG emissions from biomass for electricity is 26 times lower per kilowatthour than EPA and Energy Information Administration (EIA) data shows. It also assumes that trash incinerator GHG emissions per tonne are 56 times lower and that wood/plant burning emissions per tonne are 108 times lower than EPA and EIA data show. How can we trust this airport industry tool on other metrics when they're so far off on every input data value we spot checked so far?

[18] *Id.* at 11.
[19] *Id.* at 13.
[20] *Id.* at 17.
[21] *Id.* at 21.
[22] https://store.aci.aero/form/acert/

In addition, ACERT uses outdated GWPs from 2014 (AR5)[23] when 2021 (AR6)[24] is available, and uses the 100-year instead of 20-year GWPs, which is inappropriate considering the policy time frame (2045) being 20 years away and the fact that global warming tipping points (already showing up) aren't about to wait for 100 years. They also choose the more optimistic figures with no climate-carbon feedback which allows them to pluck out the 28 number for methane instead of 34, and 265 instead of 298 for nitrous oxide ($N_2O$). In fact, if they used the latest science (which was out for two years before the ACERT tool's latest release in 2023), the GWP for methane would be 80-82 (over 20 years), not 28 or 34 (over 100 years).

Finally, some of ACERT's data sources and emissions factors are listed as "Wikipedia," or simply as "Internet." The foundation for GHG accounting in Hawai'i state policy should have a more solid foundation than tools like GREET and ACERT, which are not confidence inspiring!

Making public policy based on deeply flawed models is problematic and results in exaggerated claims of emissions reductions that are illusory, making agencies and politicians look good while we're still cooking the planet and violating legal mandates.

**Why burnable fuels are false solutions**

All burnable fuels have significant pollution issues, including climate impacts. It is critical to move on from burning things.

The plan includes 10 kinds of burnable fuels. Actually, 11 are listed, but renewable gasoline is not included while all 10 other kinds are part of the plan.

The dominant near-term alternative fuels are corn-based ethanol and soy-based biodiesel that would have to be imported, as Hawai'i has insufficient land and water to produce much in-state.

The U.S. Environmental Protection Agency's website (since before the current administration) states the following:

> "Biofuel production and use has drawbacks as well, including land and water resource requirements, air and ground water pollution. Depending on the feedstock and production process, biofuels can emit even more GHGs than some fossil fuels on an energy-equivalent basis."[25]

There are three major congressionally-mandated reports on biofuels as it relates to the federal Renewable Fuels Standard, the last of which is over 1,000 pages long, backing up these concerns in great detail. We encourage HDOT to at least review the 19-page Compilation of Key Findings (Chapter 17) in "Biofuels and the Environment: Third Triennial Report to Congress," starting on page 856 of the PDF file.[26]

[23] https://www.climatechange2013.org/images/report/WG1AR5_Chapter08_FINAL.pdf#page=56
[24] https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_FullReport.pdf#page=1034
[25] https://www.epa.gov/risk/biofuels-and-environment
[26] https://assessments.epa.gov/biofuels/document/&deid=363940

Counting all the carbon

In addition to the underestimated GHG impacts resulting from indirect land use change (ILUC), there is a tendency to assume that GHG emissions from burning biofuels is simply zero because it's "carbon neutral."

Nearly all of the proposed fuels will still release $CO_2$ when burned. Assumptions about biogenic carbon neutrality has been repeatedly debunked by climate scientists for over 15 years. It would be good for HDOT to get familiar with these critiques, especially with regard to fuels that involve trees, municipal waste, and construction and demolition waste, where the large time lag between harvesting trees for wood and paper, and the recapture of that $CO_2$ by newly growing trees, is so long that there is no real "carbon neutrality" in a meaningful time frame.

"Biogenic" $CO_2$ comes from the burning of paper, food scraps, yard waste, wood, leather, and other materials that ultimately grew from soil. Biogenic carbon dioxide emissions are real $CO_2$ molecules that warm the atmosphere just like any $CO_2$ molecule released from the burning of plastics and other materials made from fossil fuels.

A majority of the $CO_2$ emissions from trash incinerators like H-POWER get erased in most GHG reporting due to outdated assumptions that "biogenic" carbon should not be counted. It is important to recognize that even if HDOT will not look at the science challenging biogenic carbon neutrality assumptions, the fossil fraction of trash-derived fuel must be recognized as fossil, even though the state Renewable Portfolio Standard law brands it "renewable."

The carbon neutrality assumption comes from the notion that this carbon should not be counted because trees and plants regrow, and that this carbon is simply recirculating in the biosphere, as opposed to being "new" carbon in the biosphere that was extracted from underground in the form of coal, oil, or gas.

However, carbon ($CO_2$ or methane) in the air causes global warming, while carbon in a plant or tree does not. We cannot simply pretend that carbon in a tree is the same as carbon in the air. Carbon in a plant or tree does not warm the climate until burned (or slowly decayed).

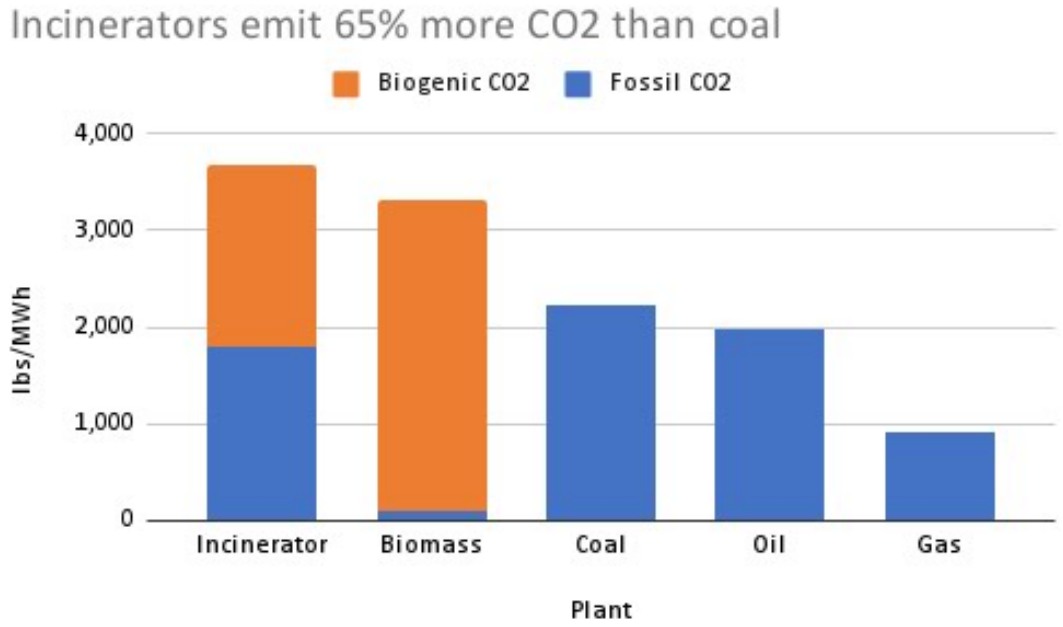
This biomass carbon neutrality notion has been debunked by climate scientists since at least 2009. There are two main reasons: double counting, and the time lag problem.

Carbon absorbed by growing plants is already factored into global climate models. The reason why it became a practice not to count carbon emissions in certain sectors was, *when looking at all sectors together*, to avoid double counting when assuming carbon is released when trees are cut down, then counting it again if those trees are burned. However, when looking just at one sector, such as vehicle emissions, it is improper to subtract biogenic carbon as if it has not already been accounted for elsewhere. This becomes an accounting problem.[27]

Should HDOT subtract GHG emissions because of plants and trees that already grew? [This would be the double counting error.] …or to subtract emissions from plants and trees that they presume will grow later? [This would be speculative, and there is not always a guarantee of trees or crops being replanted, as the Hu Honua court case demonstrated. And then there is the time lag problem…]

[27] Searchinger, T. D., Hamburg, S. P., Melillo, J., Chameides, W., Havlik, P., Kammen, D. M., et al. (2009). "Fixing a Critical Climate Accounting Error," *Science*, 326(5952), 527-528. https://doi.org/10.1126/science.1178797

Burning trees for electrical power releases 50% more $CO_2$ per unit of energy than burning coal. Burning trash for power releases 65% more $CO_2$ per unit of energy than burning coal. The following data is from EPA's Greenhouse Gas Reporting Program:




Growing trees do not instantly reabsorb this extra pulse of carbon. As the Manomet Center for Conservation Sciences documented when studying the issue for the Commonwealth of Massachusetts, it takes newly growing trees around 40-70 years to take up enough carbon to make it equivalent to burning coal.[28] This is not carbon neutrality, but just absorbing that extra $CO_2$ so that it's as bad as coal burning after several decades. Carbon neutrality would take centuries and is never quite reached, even if trees were replanted and not cut down in that time frame (or burned up in wildfires on a warming planet).

In trying to avoid critical global warming tipping points, we do not have several decades to wait for trees to suck up extra carbon released by burning trash or trees. This carbon must be counted, not discounted as if there's a free pass to release that $CO_2$ because a slow carbon cycle will eventually suck it back up.

Ironically, it is better for the climate to burn coal and plant trees than to burn trees and plant trees. We are not recommending either. However, this $CO_2$-only metric shows the absurdity of allowing biogenic carbon to be offset in this manner.

Burning trash and planting trees (which incinerator corporations are not doing, anyway) often allows the incinerator industry to subtract their emissions. However, if a gas-burning power plant planted trees, that rightfully would not count against their emissions.

[28] Thomas Walker, et. al., "Biomass Sustainability and Carbon Policy Study," Manomet Center for Conservation Sciences Report to the Commonwealth of Massachusetts Department of Energy Resources, June 2010 (Report NCI-2010-03). https://www.mass.gov/doc/manometbiomassreportfullhirezpdf/download Executive Summary available at: https://www.manomet.org/wp-content/uploads/2018/03/Manomet_Biomass_Report_ExecutiveSummary_June2010.pdf

For further background on biogenic carbon accounting, see these footnotes cited here.[29,30,31,32] We ask that these footnoted references, in full, be considered part of our comments by reference and are to be made part of the decision-making docket.

**Feedstocks**

A wide variety of feedstocks exist to make burnable fuels. Every one of them has its own significant problems, many of them rivalling fossil fuels, and all of them just "differently bad." This includes liquefying and/or gasifying or otherwise cleaning, converting or processing municipal solid waste,[33] sewage sludge,[34] construction and demolition waste,[35] animal wastes,[36] trees,[37] purpose-grown crops,[38] crop wastes,[39] vegetable oils,[40] anaerobic digester gas,[41] landfill gas,[42] algae,[43] and even "thin air" and water with electrofuels that involve direct air capture[44] and "green" hydrogen.[45]

Much has been written on these topics, and we cannot reasonably provide a full exploration of them all in these comments, but please include all of these footnoted reports and the sources within them as part of our comments, as there is much to read and know about each. Please also review our 6-page comments on Senate Bill 1120 here: https://www.capitol.hawaii.gov/sessions/session2025/Testimony/HCR70_HD1_TESTIMONY_TRN_04-01-25_.PDF#page=9

On biofuels generally, please review the excellent reports by Biofuelwatch at: https://www.biofuelwatch.org.uk/category/reports/general-overview/ and https://www.biofuelwatch.org.uk/category/reports/biofuels-liquid/

Also, the reports by Aviation Environment Federation: https://www.aef.org.uk/category/reports-briefings/

Most critically, on aviation fuel, please read this report in full: https://www.aef.org.uk/uploads/2023/11/Cerulogy_Alternative-fuels-in-aviation_Part-3-decarbonisation_Oct2023-1.pdf

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[29] Biomass Incineration and Climate. https://energyjustice.net/biomass/climate
[30] Energy Justice Network comments on EPA WARM Model. https://downloads.regulations.gov/EPA-HQ-OLEM-2023-0451-0112/attachment_1.pdf
[31] Partnership for Policy Integrity comments on EPA WARM Model. https://downloads.regulations.gov/EPA-HQ-OLEM-2023-0451-0112/attachment_7.pdf
[32] Landfill Gas https://energyjustice.net/lfg/ and the articles and links referenced at the top and under "related links," specifically this report: https://www.sierraclub.org/sites/www.sierraclub.org/files/landfill-gas-report.pdf
[33] http://www.energyjustice.net/incineration, on waste pyrolysis, see pages 3-7 and the reports footnoted within these recent comments: https://www.energyjustice.net/ny/Sullivan2025RFPComments.pdf
[34] https://sewagesludgeactionnetwork.com; http://www.ejnet.org/sludge
[35] https://energyjustice.net/waste/cd/; https://energyjustice.net/incineration/cd.pdf
[36] https://energyjustice.net/poultrylitter/
[37] https://energyjustice.net/biomass/; https://energyjustice.net/biomass/woodybiomass.pdf; https://energyjustice.net/hi/huhonua.pdf
[38] https://energyjustice.net/ethanol/ethanol-factsheet.pdf; https://energyjustice.net/biodiesel/biodiesel-factsheet.pdf
[39] https://energyjustice.net/ethanol/cellulosic/factsheet_cellulosic.pdf (covers cellulosic ethanol generally)
[40] https://www.biofuelwatch.org.uk/2025/fat-grab-report/
[41] http://www.energyjustice.net/digesters; https://zwia.org/composting-and-anaerobic-digestion-policy/; https://www.foodandwaterwatch.org/wp-content/uploads/2024/01/RB_2401_LCFS_Methane.pdf; https://foodandwaterwatch.org/wp-content/uploads/2021/04/ib_1611_manure-digesters-web.pdf; https://www.foodandwaterwatch.org/2024/01/09/the-big-oil-and-big-ag-ponzi-scheme-factory-farm-biogas/
[42] http://www.energyjustice.net/lfg
[43] https://www.biofuelwatch.org.uk/docs/Microalgae-Biofuels-Myths-and-Risks-FINAL.pdf; https://www.biofuelwatch.org.uk/category/reports/biofuels-liquid/cellulosic-algal-biofuels/; https://www.thenation.com/article/environment/exxon-algae-biofuels/; https://web.archive.org/web/20230323143637/https://www.greentechmedia.com/articles/read/lessons-from-the-great-algae-biofuel-bubble; https://www.canarymedia.com/articles/climatetech-finance/stop-trying-to-make-algae-biofuels-happen
[44] https://www.foodandwaterwatch.org/wp-content/uploads/2023/01/FSW_2212_DirectAirCapture.pdf
[45] https://www.energyjustice.net/hydrogen/

As these articles and reports document, in addition to climate change impacts, there are also many other harmful impacts that will come in the form of toxic releases, genetically modified crops and microorganisms, water and soil depletion, chemical use, land use, food insecurity, and – since most of this cannot be produced in-state – a heavy reliance on importing these fuels even while aiming to be energy independent and secure.

Relating to Hawai‘i having sufficient land or water to grow biofuels vs. the need to import most of them, as well as concerns relating to whether taxpayers or airline customers should foot the bill for subsidizing these biofuels, we encourage all to watch the 35-minute hearing on Senate Bill 995 of 2025, pertaining to "Sustainable Aviation Fuel Import Tax Credit; Renewable Fuels Production Tax Credit."[46] Senator DeCoite calls up staff from the state Department of Agriculture who make it clear that there is not sufficient land or water available for this purpose. Other testimonies during this hearing are quite eye opening. You can view it here: https://www.youtube.com/live/eLQmyLuHOu8?feature=shared&t=283

As page 51 of the plan admits, most of the envisioned fuels do not exist and are not low-GHG at this point where they do exist:

> "While Hawai‘i is committed to transitioning marine operations to low- or zero-carbon fuels such as green hydrogen, methanol, and advanced biofuels, many of these alternatives are not yet commercially viable, lack supporting infrastructure in the state, or currently carry high lifecycle carbon intensities due to existing production methods."

This reality is not likely to change for biofuels, though electrofuels (horribly expensive and inefficient at this time) will get cleaner over time as the electric grid gradually shifts to clean, renewable sources.

Food vs. Fuel; Imports

Page 2 of the plan states "we must decrease our dependence on imported energy and food." The plan also acknowledges the problem on page F-7 where it states: "But if virgin oils such as palm or soybean oil are used extensively, it can create tension with food supply and raise concerns about deforestation and agricultural expansion."

This is a great reason not to grow biofuels in-state.

Hawai‘i is dependent on importing about 80-90% of its energy and 80-90% of its food. Using precious land to grow fuel for vehicles necessarily means making the state even more food insecure. As the Department of Agriculture testimony showed on SB 995 of 2025, there is next to no land or water available to grow fuels in the state, requiring that nearly all reliance on biofuels will mean shipping it in from the continent. The answer is not to grow or import biofuels, but to electrify with local (non-burn) renewable energy production.

Biotechnology

The biotechnology industry's trade association routinely testifies in favor of biofuels bills in the state legislature. Their testimonies never state why they are so supportive of biofuels, but it is obvious to anyone who knows enough about the industry. The main biofuels currently in

[46] https://www.capitol.hawaii.gov/session/measure_indiv.aspx?billtype=SB&billnumber=995&year=2025

production are corn-based ethanol and soy-based biodiesel. As of 2024, 94% of corn grown in the U.S. is grown with genetically modified organisms (GMOs) and 96% of the soy is GMO.[47] This is primarily to withstand higher doses of herbicides, which leads to more herbicide spraying, mainly with Bayer (formerly Monsanto) product, Roundup (glyphosate), which is the subject of many lawsuits now that it is shown that it's not as safe as table salt, and indeed causes cancer. These herbicides have also been tied to harming amphibians, including deformities in frogs born with extra legs and such. There are other food and biofuel crops and trees that industry has been working to make GMO varieties of for many years, which could also be on the horizon for biofuel production in Hawai'i. Read more on the impacts of ethanol and biodiesel production in our factsheets linked in footnote 38.

As living organisms, GMO crops don't always stay where they are planted. There is a history of them contaminating nearby farms of organic farmers, for example. Since the GMO crops are patented intellectual property, there is a brutal history of Monsanto suing farmers whose farms were contaminated with their seed, as if the farmer was stealing the company's property.

Far more disturbing, however, is the biotech industry's other main motivation for supporting biofuels bills. They have long been experimenting with genetic modification of bacteria, algae and enzymes. Algae biofuels have been explored extensively, and have been a huge failure, whether genetically modified or not. Please review the reports in footnote 43 for details. Enzymes have been a part of efforts to make cellulosic ethanol viable… an industry that aims to convert everything from corn husks to pizza boxes to trash into liquid fuels. This industry has also been riddled with failed attempts for 2-3 decades. Genetically modifying bacteria is also linked to biofuels production. Given how impossible it is to contain microbes, and how quickly they can reproduce, having unnatural versions of microbes out in the wild could have unintended and disastrous consequences.[48]

A European company has developed a GMO variety of Klepbsiella planticola (KP), one of the most common bacteria on the planet, designing it to make alcohol out of plant matter. The idea was to make use of wheat straw, stalks and leaves. A researcher at University of Oregon tested it to see if it could survive in the wild, and found that it readily killed the plant in his experiment while the non-GMO variety did not.[49] If microbes like this were to be able to survive in the wild, the ecological consequences could be unthinkable.

Waste-based fuels

Some companies are pushing to use gasification or pyrolysis technologies to make burnable fuels from trash, construction and demolition (C&D) debris, and other waste streams. This is toxic and polluting, quite expensive, and has not worked at commercial scale. Please see our comments on the Maui Aloha Aina Project that seeks to turn trash into fuels to barge to O'ahu.[50] As we discuss in our testimonies on "clean fuels" bills,[51] the toxic hazards associated with pyrolysis or gasification of C&D waste are serious, especially where wood treated with copper, chromium and

[47] https://www.ers.usda.gov/data-products/adoption-of-genetically-engineered-crops-in-the-united-states; https://www.ers.usda.gov/data-products/adoption-of-genetically-engineered-crops-in-the-united-states/recent-trends-in-ge-adoption
[48] Szyjka, S. et al. (2017). Evaluation of phenotype stability and ecological risk of a genetically engineered alga un open pond production. Algal Research, 24. http://www.sciencedirect.com/science/article/pii/S2211926417300024
[49] https://www.sciencedirect.com/science/article/abs/pii/S0929139398001292 (bypass paywall here); See also: https://www.gmwatch.org/en/latest-listing/1-news-items/8951-full-story-of-the-dr-elaine-ingham-controversy-over-klebsiella-p; https://www.saynotogmos.org/klebsiella.html; https://web.archive.org/web/20071219095433/http://www.purefood.org/ge/klebsiella.cfm
[50] The project is described here: https://files.hawaii.gov/dbedt/erp/Doc_Library/2025-06-23-MA-DEA-Maui-Aloha-Aina-Project.pdf and our comments on this Environmental Assessment are here: https://www.energyjustice.net/hi/MauiWTFcomments.pdf
[51] https://www.capitol.hawaii.gov/sessions/session2025/Testimony/HCR70_HD1_TESTIMONY_TRN_04-01-25_.PDF#page=9

arsenic is present. For example, Aloha Carbon's plan to try to gasify C&D waste in Campbell Industrial Park on O'ahu would inevitably involve handling treated wood which the Hawaii Natural Energy Institute documented to have 200 times as much arsenic as clean wood.[52]

Green Hydrogen

Half of the ten fuel pathways involve "green hydrogen" (SAF, eSAF, e-Methanol, e-Ammonia, and green hydrogen itself). Hydrogen is typically extracted from fossil gas, but can come from other hydrocarbons. Green hydrogen involves electrolyzing water to split it with renewable energy into hydrogen and oxygen, which recombine when used in a fuel cell or burned.

Green hydrogen production is very inefficient, and will never be truly "green" until there is excess wind or solar on the grid. Until then, wasting 50-80% of the clean wind or solar energy in the process of splitting water and using the hydrogen fuel makes no sense because it would be better to use that clean energy to displace oil directly on the grid instead of displacing a much smaller amount of oil in a vehicle.

The plan ought to be careful not to over-claim, such as stating that there is no associated carbon emissions from production of green hydrogen if made from renewable sources. After all, burning trash, trees, and other sorts of biomass, biofuels or biogas are all renewable, and all have significant carbon emissions.

There are many other issues with hydrogen. Please review the top articles linked from our https://www.energyjustice.net/hydrogen page for good overviews. Also, newer evidence shows that hydrogen can be an indirect greenhouse gas when it inevitably leaks (it's tiny and hard to contain and can embrittle steel pipe).[53]

Long-distance aviation and some industrial heating applications are the only sectors that may need green hydrogen, and both are outside of the scope of this settlement. Prematurely allowing "green" hydrogen in the plan just means more oil burning to make up for the electricity wasted making hydrogen.

Electrofuels

Direct air capture is another inefficient and wasteful scheme some aim to combine with other energy-wasting ideas (green hydrogen) to make "sustainable aviation fuel" which is specifically promoted in the settlement. Like green hydrogen, it makes no sense to use before the electric grid is 100% powered by non-combustion renewable energy sources and has extra wind and solar to spare. Doing so would release about as much or more $CO_2$ than it would capture, either directly by using oil-fired power, or indirectly by using up renewables that could be displacing oil-fired power.

[52] See pages 2-3 in their testimony here: https://www.capitol.hawaii.gov/sessions/session2025/Testimony/HB976_TESTIMONY_EEP_01-28-25_.PDF#page=42

[53] https://www.canarymedia.com/articles/enn/scientists-warn-a-poorly-managed-hydrogen-rush-could-make-climate-change-worse; https://www.dnv.com/article/is-hydrogen-a-greenhouse-gas--243214/; https://www.cleanegroup.org/initiatives/hydrogen/areas-of-concern/

Leaky pipelines

Transportation of hydrogen and methane in existing, leaky gas pipelines risks ongoing GHG releases and should not be allowed.

**Electrify**

In order to get away from burning things, we need to electrify the transportation sector, and ensure there are zero greenhouse gases from the electricity sector. (The transportation sector cannot become zero emission if it relies on an electricity sector that is still powered, in part, by GHG-emitting combustion sources.) Currently, the state's combustion sources of electricity generation are 66% from oil-burning, plus another 4% from "renewable" burning of trash, trees, and biofuels... all of which need to be eliminated to reach a zero GHG emissions target.

It is not enough to rely on the state's Renewable Portfolio Standard, which requires 100% "renewable" electricity by 2045, since this law includes the burning of "biomass" (trash, trees and other solid waste and crops), liquid biofuels, and biogas (toxic landfill gases and anaerobic digester gas). These fuels have carbon emissions worse than fossil fuels. Several corporations are aiming to expand use of these "bio" fuels, which will undermine the state's climate goals. The state's Renewable Portfolio Standard (RPS) law must be fixed to remove combustion so that these fuels no longer qualify.

It is possible to electrify ground transportation, and sea and air interisland transportation, while decarbonizing the electricity sector, in a clean way that focuses on conservation, efficiency, solar, wind, and energy storage. This can be done reliably, more cheaply, and with fewer environmental impacts than the false solutions in the draft plan.

HECO is 64.2% oil generation and 3.3% waste/biofuels as of 2024. Clean (non-combustion) renewable electricity must displace this 67.5% combustion power before wasting energy on "green hydrogen" or electrofuels for planes. Otherwise, you're keeping the grid dirtier and contributing to more GHGs.

HDOT's plan should focus on ensuring an adequate supply of clean electricity by speeding up the process of cleaning up the electric grid while expanding clean renewable generation.

As the chart on the next page demonstrates, it's far more efficient to displace coal or gas power on the grid (oil would be in between those two) than to use clean energy to make hydrogen or jet fuel.[54]

[54] See page 24 in https://www.aef.org.uk/uploads/2023/11/Cerulogy_Alternative-fuels-in-aviation_Part-3-decarbonisation_Oct2023-1.pdf

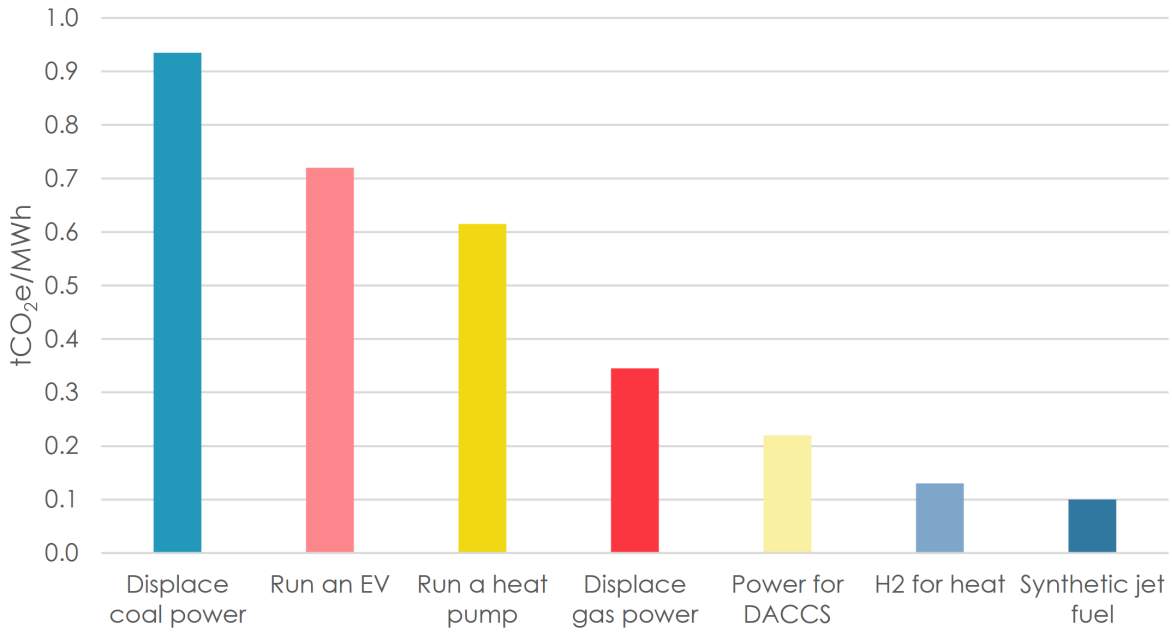


**Figure 4** **Emission avoidance with 1 MWh of zero carbon electricity in example applications**

Clearly, cars and small trucks can be electrified. Heavy trucking, planes and boats are the areas that are less common. However, aside from long-distance air travel, all the rest can be electrified today, and the technology exists.

The plan says, on page 24, that "EVs may not meet the operational needs for some heavy-duty truck applications." This is outdated information. There are now EV trash trucks and long-haul trucks long enough to do any land distance in Hawai'i. The longest likely heavy truck trip possible in the state would probably be a trash truck going as much as 130 miles for the longest routes to the West Hawaii Sanitary Landfill from the east side of Hawaii Island. EV semi trucks have ranges of 150-500 miles as of this 2023 article.[55] Specific to trash trucks, Waste Today Magazone writes: "Designed for commercial and residential refuse collection, the Model 520EV can handle up to 1,100 trash bins on a single charge."[56]

**Avoiding Fraud / Double-Counting**

There are plenty of ways to game the system, and not enough safeguards in place. With a state mandate for 100% "renewable" electricity by 2045 and a concurring mandate for zero GHG emissions from the transportation sector by 2045, it could be attractive to allow the same "renewable" electricity (which could be burning trash or trees or could be real renewables like wind and solar) to serve both at the same time. However, this is generally considered double-counting and some states and regional grids have protections against that sort of fraud. HDOT ought to work with the PUC and legislature to ensure that there is no double counting of electrons

[55] https://www.eesi.org/papers/view/fact-sheet-the-future-of-the-trucking-industry-electric-semi-trucks-2023
[56] https://www.wastetodaymagazine.com/news/peterbilt-delivers-ev-trucks-to-waste-connections-of-new-york/

or emissions attributes when developing any parallel mandate that will inevitably draw on renewable electricity to some degree.[57]

**Reduce demand**

Demand reduction in both the electricity and transportation sectors must be a priority to help make it reasonable for both sectors to be clean and renewable by 2045. Conservation and efficiency strategies to reduce electricity waste would reduce the amount of new clean renewable energy generation capacity and storage that needs to be added to the grid in order to have enough excess clean electricity to power vehicles.

**The Elephant in the Air; Stay within the Scope**

According to the pie chart on page 15 of the plan, 53% of the greenhouse gases from the state's transportation sector are from air travel. How much of that 53% is from flights to other U.S. states? HDOT is only required by HRS § 225P-8 and the *Navahine F.* settlement agreement to address interisland air transportation (but not military aviation, nor flights to and from Hawaii).

On page B-11, it states "[p]er the settlement agreement, international marine and aviation activities are not included in the calculations and strategies identified in this Plan, which is also consistent with the DOH GHG Inventory." Note that it's not just international aviation, but interstate aviation is also excluded. The only marine or air travel that is in the scope is that which is within the state. This is not the time to broaden the scope, making a hard task even harder. Get this right, then once 2045 rolls around, perhaps there will be better options for long-distance air travel. Long-distance container shipping already has electrification piloted, but that's not for HDOT to worry about yet!

<u>Solving local air travel</u>

Interisland air travel can be electrified through a combination of electric-powered ferries and seagliders, as the Hawaiian Seaglider Initiative is exploring with the major airlines.[58]

Granted, seagliders are fairly new, but they now exist and are being tested out. The Regent Seaglider[59] seats 12 people so far, which is 12-15 times fewer than the planes typically used. Hawaiian Airlines uses a Boeing 717 (128 passengers) and Southwest uses a Boeing 737 MAX8 (175 passengers).

To make this possible without congestion, there can be more departure and landing points. HDOT should be working to plan out infrastructure for this as part of this plan.

Also, since many of the flights are surely for tourists, there are many who may not be in such a rush and might opt for a ferry between islands, which would be slower, but likely cheaper. It would allow for whale and dolphin watching and will reduce the numbers who have to be in planes. Prior controversies over the Super Ferry can hopefully be avoided. After all, plenty of cruise ships and

[57] See discussion of double-counting here: https://www.aef.org.uk/2025/08/05/double-counting-risks-in-saf-global-supply-chain/
[58] https://www.hawaiiseaglider.org/april-press-release
[59] https://www.regentcraft.com/seagliders/viceroy; see also https://www.youtube.com/watch?v=ggK0vIqiSV4, https://www.youtube.com/watch?v=QVMeSbgdOL0, and https://www.youtube.com/watch?v=s-GP_0Cud98

cargo ships already go between the islands. Some passenger ships shouldn't make a major difference.

Page 58 contains the plan's only mention of Electric Aircraft, which is a case study of a 3-passeng"er electric plan for "travel across the island of Maui." This may make sense for emergency medical transportation if electrifying a helicopter doesn't make more sense, but "enable faster and more frequent travel across the island of Maui" should not be a goal as it's simply increasing transportation use, and to what end? Let people drive an EV or take an electric bus. Electric aircraft are needed to get between islands, and the current electric options (sea gliders) can do 12 passengers, four times more than this case study. Why is that not featured in the plan instead?

**Dangerous "Carbon Removal" Schemes**

Instead of trying to reach zero GHG emissions, as legally required, the plan assumes HDOT will fall short by 8-10%, and aims to make up for this with projects that purport to reduce emissions elsewhere.

Plans to burn trees and other organic material (biochar, BECCS) are also harmful and toxic, and carbon capture and storage technologies do not capture 100% of their CO2 emissions. Biochar (mentioned on page C-3) is an incineration technology (pyrolysis) that is toxic and problematic.[60]

Plans to filter seawater with membranes to remove CO2 would impact any other sea life that is caught up in the process.

"Enhanced rock weathering" would risk spreading metals into the environment while disturbing natural features.

Injecting CO2 into concrete can leak out over time.

Recycling plastic waste into roads (mentioned on page 33) is adding many toxic chemicals to asphalt, making it far more toxic than asphalt already is with the introduction of additives (catalysts, stabilizers, color pigments), PFAS and more.[61]

While not directly mentioned, several sections "pave" the way for Honolulu's plan to recycle toxic H-POWER trash incinerator ash into roads, which would spread toxic chemicals throughout our environment. While there is great controversy in O'ahu over the building of a new (double-lined) landfill over the aquifer, the City and County of Honolulu is pursuing plans to take the same waste (the toxic ash from the H-POWER trash incinerator) and build roads with it over the island. These would be linear unlined landfills, exposing people and the environment to dioxins and toxic metals in the ash. However, this will likely be framed as a strategy for "low carbon concrete."[62] In New York state, the state with the most trash incinerators (ten of them), the toxic chemical content of their incinerator ash is high enough that if placed on the land, it would meet the soil cleanup standards and would be required to be cleaned up.[63]

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[60] https://energyjustice.net/incineration/biochar.pdf; https://www.biofuelwatch.org.uk/wp-content/uploads/Biochar-briefing-2024.pdf; https://www.biofuelwatch.org.uk/category/reports/biochar/

[61] https://pmc.ncbi.nlm.nih.gov/articles/PMC12347778/

[62] For info on incinerator ash testing, safety and "recycling," see https://www.capitol.hawaii.gov/sessions/session2025/Testimony/SB438_HD2_TESTIMONY_JHA_04-02-25_.PDF#page=45 or pages 9-12 here starting half-way through page 9: https://www.energyjustice.net/ny/Sullivan2025RFPComments.pdf

[63] https://www.energyjustice.net/incineration/ashvssoilcleanup.pdf

The last 8% is a violation of state law and the legal settlement, as it represents GHG emissions that will continue, but are to be compensated by supposed reductions elsewhere.

**Policy solutions / Legal authority**

Page 3 states: “Establish a market-based mechanism to incentivize the use of clean marine fuels and discourage the use of fossil fuels.” In policy-making, avoid “market-based mechanisms” like carbon fees since they are not guaranteed to be strong enough or specific enough to meet a target. HDOT will not get to zero with policies like “discourage” rather than “ban.”

Page 36 states: “If every new vehicle sold in Hawai‘i was an EV starting in 2030, some gasoline vehicles could remain on the road in 2045.” If the legal authority exists to actually meet the goal of zero, then make this goal mandatory. Also, if it’s close enough to zero, will there really be gas stations left to service the rare people left with gasoline vehicles?

Page 3: “Increase the use of electric vehicles (EVs) statewide by expanding public charging infrastructure, converting transit vehicles to electric, and providing financial incentives for EV adoption.” Can the state set emissions standards? Can it ban sales of gasoline or diesel vehicles?

Page 56 discusses curtailing cruise ships. Will this run into interstate Commerce Clause challenges, or does the state really have the power to mandate it? It would be unrealistic to rely on cruise companies to voluntarily curtail their business.

There are discussions on pages 59 and F-16 on why the state cannot mandate SAF. If that’s the case, then what indirect ways can the state get people out of planes and into the seagliders and ferries that can be fully electrified? Build it, and making it cheaper, more flexible, and attractive and they will come?

There are several areas in the plan that seem to have been written as if Trump is not president and as if the “One Big Beautiful Bill” had not passed. This includes page 35 where it says that “current federal regulations will spur increasing sales of EVs,” and page 41 where it talks about “securing federal grants” for electric fleets, page 84 where it says HDOT has applied for and received a Clean Materials Grant (is this secured or vulnerable to Trump admin cuts?). Page B-12 also talks about EPA CAFE standards. Were these not recently gutted?

**Public Involvement**

Page 61 mentions that “HDOT will lead a statewide coalition of airlines, fuel producers, farmers, NGOs, and government agencies to build a shared roadmap for producing, importing, and using sustainable aviation fuel (SAF) in Hawai‘i.” This is mostly the fox in charge of the henhouse. Before involving all of these economic interests, how about revisiting whether SAF makes sense and whether HDOT plans to tackle interstate air travel, even though it’s beyond the scope of the state law and settlement agreement?

There must be more knowledgeable people with critical views involved in the inner circle as this work continues. The small circle of agency staff, industry interests, plaintiffs and youth have clearly not been sufficient to prevent this draft plan from being a laundry list of false solutions.

Page 61 states that in September 2025, a “first coalition meeting” will be held. Will these meetings be open to the public? Please answer this in time for us to participate.

Page 77 states “This strategy represents HDOT’s chosen approach to implement the strategies in this Plan. It is already underway with HDOT engaging key stakeholders to consult on this Plan prior to its release, and regularly communicating and collaborating with Earthjustice, Our Children’s Trust, and Hawai‘i Youth Transportation Council.” Please regularly communicate with us as well. Being on the outside trying to look in has not been productive or collaborative.

Page 91 states: “HDOT plans to update the plan annually for the first 5 years after the issuance of the first plan. This will allow for additional analysis as needed, integration of new technologies as they become available, and will reflect progress made by HDOT.”

It’s good to see this. How do we become an integral part of the process rather than a once-per-year opportunity to comment on something already drafted?

**Errata**

- Page 16: “four general aviation airports” should say five?
- Fig 3-4: “overacrching” and “aagressive”
- Pages 8 & 70: “Airport Carbon And Emission Reduction Tool” should be “Airport Carbon **a**nd Emission**s Reporting** Tool”
- Page F-13: “the climate benefit of renewable LNG hinge” - need ‘s’ on benefit or hinge

**Conclusion**

There are many ideas in the HDOT plan that are decent and just need to be scaled up, especially every method to electrify transportation. Public transportation needs to be ramped up a lot, and be fare-free. Trash, recycling and composting collection should be one hauler going to all homes for curbside collection so that we don't have people doing separate trips to transfer stations in the neighbor islands. Efforts to grow more food (not fuel!) on the islands will increase food security while reducing shipping. Let’s make this all happen… the right way, in the right order, without more combustion, please!

Mahalo nui loa,

Mike Ewall, Esq.
Executive Director, Energy Justice Network
Co-Chair, Environmental Caucus of the Democratic Party of Hawai‘i
215-436-9511
mike@energyjustice.net
http://www.energyjustice.net

Melodie Aduja
Chair, Kōkua nā ‘Āina

Alan Burdick
Co-Chair, Environmental Caucus of the Democratic Party of Hawai‘i

**SB-2999**
Submitted on: 2/16/2026 12:48:00 PM
Testimony for TRS on 2/17/2026 3:01:00 PM

| Submitted By | Organization | Testifier Position | Testify |
|---|---|---|---|
| Henry Curtis | Testifying for Life of the Land | Support | Written Testimony Only |

Comments:

**Aloha**

**Life of the Land supports establishing clean fuel standards. It is critical that we address climate change by decreasing the GHG emissions of fuels.**

**Mahalo,**

**Henry Curtis**

**Executive Director**

Environmental Caucus of
The Democratic Party of Hawai‘i

**OPPOSITION TESTIMONY SB 2999 – RELATING TO A CLEAN FUEL STANDARD**

**Hearing: TRS/AEN • Tuesday, February 17, 2026 • 3:01 PM**

Place: **Conference Room 229 & Videoconference**

Aloha Chairs Inouye and Gabbard, Vice Chairs Elefante and Richards, and Members of the Committees,

The Environmental Caucus of the Democratic Party of Hawai‘i respectfully submits **strong opposition** to SB 2999.

1. Clean Fuel Standards in other states have consistently promoted combustion-based fuels rather than accelerating a transition to true zero-emission transportation. Programs in California, Oregon, and Washington have shown that the majority of credits flow to biofuels, renewable natural gas, waste-derived fuels, and hydrogen produced from fossil gas. These fuels still burn, still emit greenhouse gases, still create upstream pollution burdens, and still rely on land-intensive or waste-intensive feedstocks. This is not a clean energy transition; it is a mechanism that preserves combustion under a “clean” label.

2. SB 2999 contains no statutory guardrails to prevent these harmful outcomes. The bill grants the Department of Transportation broad authority to design a Clean Fuel Standard without requiring prioritization of zero-emission electrification, without excluding combustion-based fuels, without accounting for lifecycle impacts on land, water, and health, and without protecting consumers from increased costs. Without explicit protections, DOT could adopt rules that expand markets for burnable fuels, mirroring the failures seen in other states.

3. The HDOT Clean Transportation Plan already signals a shift toward combustion pathways. As noted in the Energy Justice Network testimony, HDOT’s planning documents emphasize biofuels, renewable natural gas, and hydrogen from fossil gas as transition strategies. SB 2999 would give DOT the authority to codify these polluting pathways into a statewide standard, locking Hawai‘i into decades of combustion and delaying the transition to true zero-emission transportation.

4. Burnable fuels—whether labeled renewable, low-carbon, or clean—continue to harm climate, land, water, and public health. Combustion produces carbon dioxide, nitrogen oxides, particulate pollution, and toxic byproducts. Biofuel feedstocks drive deforestation, monocropping, pesticide use, and water depletion. Renewable natural gas and waste-derived fuels incentivize continued waste generation and landfill expansion. These are not climate solutions and should not be subsidized by the State.
5. Hawaiʻi has better, truly clean alternatives that do not require combustion. The State should be investing in transportation electrification, public transit expansion, walkable and bikeable communities, charging infrastructure, and true zero-emission technologies. These strategies reduce emissions without creating new pollution pathways and align with Hawaiʻi's climate, environmental justice, and public-health goals.

For these reasons, the Environmental Caucus urges the Committees to **hold SB 2999** and instead pursue policies that accelerate a genuine zero-emission transportation future for Hawaiʻi.

Mahalo for the opportunity to testify.

Alan Burdick, Co-chair
Mike Ewall, Co-chair
Melodie Aduja, Co-chair Emerita
**Environmental Caucus Democratic Party of Hawaiʻi**

Senate Committee on Transportation
Senator Lorraine Inouye, Chair
Senator Brandon J.C. Elefante, Vice Chair

Senate Committee on Agriculture and Environment
Senator Mike Gabbard, Chair
Senator Tim Richards, Vice Chair

February 17, 2026
3:01 pm
Conference Room 229

Pump Cleaner Fuels Hawai‘i is grateful for the opportunity to express strong support for HB 1986 to implement a HI Clean Fuel Standard (CFS). The CFS is a strong, reliable, and proven policy mechanism that addresses fuel emissions while enhancing energy security, resilience, and economic prosperity. HB 1986 represents a pragmatic, actionable plan to decouple emissions from economic growth and feasibly transition Hawai‘i to a renewable economy.

Hawai‘i’s dependence on the transportation sector underscores the critical importance of prioritizing the industry’s economic output and long-term resilience. With current reliance on imports to supply fuels, a CFS will reduce Hawai’i’s vulnerability to supply chain disruptions, geopolitical uncertainty, and volatile global fuel prices. By slowly requiring reductions in the lifecycle emissions of transportation fuels over time, HB 1986 offers a flexible approach that allows market participants to utilize the most cost-effective strategies to address greenhouse gas emissions.

Clean Fuel Standard–like programs in California, Washington, Oregon, and throughout Canada have created markets where consumers are protected, economic growth is strong, and emissions are declining year over year. States with these policies have benefited from the deployment of electric charging infrastructure, private investment, job creation and protection, and significant public health benefits through reduced air pollution. Hawai‘i has the opportunity to replicate these benefits through the passage and implementation of this program.

HB 1986 aligns with Hawai‘i’s climate and economic goals and utilizes a private market approach rather than a mandate or a tax. For these reasons, I respectfully urge the Committee to pass HB 1986.

Sincerely,
Liat Carlyle

Par Hawaii

February 17, 2026

**TESTIMONY ON SB 2999**
**RELATING TO A CLEAN FUEL STANDARD**

Senate Committee on Transportation
Senator Lorraine R. Inouye, Chair
Senator Brandon J.C. Elefante, Vice Chair

Senate Committee on Agriculture and Environment
Senator Mike Gabbard, Chair
Senator Herbert M. "Tim" Richards, III, Vice Chair

Tuesday, February 17 at 3:01 p.m.
State Capitol, Conference Room 229

Aloha Chairs Inouye and Gabbard, Vice Chairs Elefante and Richards, and members of the Committees,

Thank you for this opportunity to submit written testimony offering **comments** on SB 2999, Relating to A Clean Fuel Standard.

My name is Eric Wright and I serve as President of Par Hawaii. Par Hawaii is the largest local supplier of fuels, including various grades of utility fuels, as well as diesel, jet fuel, gasoline and propane.

SB 2999 would require the Hawaii State Energy Office (HSEO) to adopt rules governing a clean fuel standard for gasoline and diesel in the State. The bill would be similar to policies in West Coast jurisdictions, including California, Washington, and Oregon.

We recognize the importance of charting a clean energy future for Hawaii. As the local producer of fuels for Hawaii's consumers, we have committed to being a part of this future by investing over $100 million to develop Hawaii's largest liquid renewable fuels manufacturing facility at our Kapolei refinery.

**Par Hawaii currently employs more than 630 employees statewide, including those at our Kapolei refinery who are spearheading the production of renewable fuels. It is important that a clean fuel standard not create unintended consequences that result in job losses in Hawaii. Therefore, we recommend the bill be amended to add a provision that the Department of Transportation adopt rules to ensure that local production of fuels are not disadvantaged relative to imported fuels.**

Par Hawaii

We also note the following with regard to a clean fuel standard for Hawaii:

1. Implementing and administering a clean fuel standard (CFS) is a significant undertaking. It is important that a broad range of stakeholders are consulted to avoid unintended consequences of this legislation. For example, a rise in gas prices could disproportionately impact working families and small businesses, increase transportation and goods costs, and place additional financial strain on rural and neighbor island communities with limited alternatives.
2. Hawaii's energy landscape is significantly different than that of mainland states. We have much higher demands for aviation fuel and liquid fuels for power generation. It is important that a Hawaii CFS take into account the unique needs of our state.
3. The cost to produce renewable fuels for transportation is well above that of fossil fuels. While there are federal programs in place to partially bridge the gap, state level incentives are also required to make renewable fuels competitive with fossil fuels. We believe that a clean fuel standard should be paired with an expansion of the Hawaii renewable fuels production tax credit (HRS 235-110.32). This is particularly important because it can take years for the CFS credit market to develop to the point where it serves as an effective long-term incentive for renewable fuels.

We believe it is possible to produce significant amounts of renewable fuel here in Hawaii, and in a way that supports the local agriculture sector. Par Hawaii has partnered with Pono Pacific, a land management and conservation company, to develop locally grown, oil-yielding crops that will contribute to Hawaii's clean energy future.

In summary, we believe it is important to proceed cautiously and thoughtfully on a Hawaii CFS. We look forward to participating in this dialogue.

Thank you for allowing Par Hawaii the opportunity to present these comments for the Committee's consideration.

Testimony of
**ALASKA AIRLINES and HAWAIIAN AIRLINES**

Before the Senate Committees on
**Transportation**
**Agriculture and Environment**

**Tuesday, February 17, 2026**
**3:01 P.M.**
**Hawai‘i State Capitol, Room 229**

In consideration of
**SENATE BILL 2999**
**RELATING TO A CLEAN FUEL STANDARD**

The Honorable Lorraine Inouye, Chair of the Committee on Transportation
The Honorable Mike Gabbard, Chair of the Committee on Agriculture and Environment
Members of the Committees on Transportation and Agriculture and Environment

Re: **Testimony in Support of S.B. 2999, Relating To A Clean Fuel Standard**

Chairs Inouye, Gabbard and members of the joint committees:

Alaska Airlines and Hawaiian Airlines appreciate the opportunity to provide comments on S.B. 2999, which would require the Department of Transportation to adopt rules establishing a Clean Fuel Standard for alternative fuels in Hawai‘i.

As the largest carriers serving our state, aviation is essential to Hawai‘i’s economy, connectivity, and daily life. We are committed to decarbonizing our operations, and sustainable aviation fuel (SAF) represents the most viable and scalable pathway to meaningfully reduce aviation emissions in the near and medium term.

**Aviation Exemption and Federal Preemption**

We strongly support the bill’s clear exemption for fuels used by aircraft, as reflected in Section 2(a)(9). Aviation fuel is governed by a comprehensive federal regulatory framework addressing aircraft operations, safety, and fuel standards. Any state-level mandate directly obligating jet fuel under a clean fuel standard would raise significant federal preemption concerns. Maintaining aviation’s exempt status is therefore essential to ensure the program remains legally defensible and avoids unintended conflicts with federal law.

**Importance of the SAF Opt-In Mechanism**

We also strongly support the inclusion of an opt-in mechanism for exempt end-uses, including aviation, to generate credits when using alternative fuels, as provided in Section 2(b)(3).

This structure is critical for SAF. Renewable diesel is more profitable for producers than SAF and already has a structural advantage under clean fuel programs because it directly displaces obligated diesel fuel in the road transportation pool. SAF, by contrast, serves an exempt sector. If SAF were not permitted to opt in and generate credits, that would further widen the gap between renewable diesel and SAF, effectively excluding aviation from participating in the program's benefits. Allowing SAF to opt in ensures aviation can participate in the credit market without creating a legal obligation on jet fuel.

**A Clean Fuel Standard Alone Will Not Drive SAF Scale**

While the SAF opt-in provision is essential, we respectfully emphasize that a Clean Fuel Standard alone will not be sufficient to incentivize meaningful volumes of SAF in Hawai‘i. A CFS is fundamentally a mandate to decarbonize the road fuel pool, and in practice renewable diesel and electric vehicle adoption are likely to be the primary beneficiaries of the program. These technologies directly displace gasoline and diesel in the obligated sectors and therefore generate compliance value more immediately. SAF competes in a different market and does not displace obligated road fuel; its economic viability under a CFS depends heavily on credit values reaching levels sufficient to close the price gap between SAF and conventional jet fuel.

The bill contemplates rulemaking through 2028, with diesel and gasoline compliance beginning in 2029. Based on experience in other jurisdictions, it will likely take several years for the program to mature and for credit values to stabilize at levels high enough to influence significant fuel investment decisions. Additionally, Hawai‘i's unique fuel mix presents structural limitations. Road fuels represent a relatively small portion of the overall fuel pool compared to states with larger ground transportation markets. Because credit generation is driven primarily by the road fuel sector, it is not clear that credit values in Hawai‘i would rise to levels sufficient to independently incentivize large-scale SAF deployment.

**Continued Need for Targeted Hawai‘i SAF Incentives**

For these reasons, even if a CFS is enacted, targeted Hawai‘i SAF tax incentives remain essential over the next decade to drive SAF production, importation, and adoption. A CFS can be an important complementary policy, but in the near and medium term direct, targeted SAF incentives will be necessary to help close the price differential between SAF and conventional jet fuel, provide investment certainty to producers and suppliers, and support the scaling of SAF supply into and within Hawai‘i. Without such targeted incentives, SAF risks remaining commercially uncompetitive relative to renewable diesel and other decarbonization pathways supported under the CFS.

Mahalo for the opportunity to provide testimony and comments on this measure.

Clean Energy
Ryan.Kenny@cleanenergyfuels.com

www.cleanenergyfuels.com

Ryan Kenny
Policy Director – Western U.S.

LATE

Senate Committee on Agriculture and Environment
Senator Mike Gabbard, Chair
Senator Herbert M. “Tim” Richards, III

Senate Committee on Transportation
Senator Lorraine R. Inouye, Chair
Senator Brandon J.C. Elefante, Vice Chair

February 17, 2026
3:01pm
Conference Room 229

Aloha Chair Gabbard, Chair Inouye, Vice Chair Richards, III and Vice Chair Elefante:

On behalf of Clean Energy, I would like to express **strong support for SB 2999** which would require the Department of Transportation to adopt rules governing a clean fuel standard for alternative fuels in the state of Hawaii.

Our company was a foundation stakeholder since a CFS was conceived in the respective California, Oregon, New Mexico and Washington processes. Each of these states has been a success and we believe it will be a success in Hawaii as well. As North America’s largest provider of renewable natural gas (RNG) transportation fuel with over twenty-nine years of leading industry experience, Clean Energy provides construction, operation and maintenance services for refueling stations nationwide. We have a deep understanding of the growing marketplace, as our portfolio includes over 600 stations in 43 states and we deliver liquified natural gas to Hawaii’s utility and built a fuel station in Honolulu.

Already used as a clean, low carbon source of energy around the world, RNG is proven to be a cost-saving alternative fuel to diesel and gasoline. RNG for transportation fuel strengthens our economy with lower fuel costs, increases our energy security, and significantly benefits our environment by reducing carbon emissions and smog-forming NOx emissions by up to 300% and 99%, respectively, relative to diesel fuel.

As we have seen in California, this approach will not significantly raise fuel prices. Recent analyses show that retail fossil fuel prices are strongly influenced by many factors (e.g., global events, holiday weekends, seasonal fluctuations, refinery disruptions and decisions about production that affect supply, refinery pricing decisions, seasonal fuel blends, and taxes) and fossil fuel producer pricing strategies are complex, reflecting local and regional market conditions. **As the California Air Resources Board**

**has noted: "The reality is that the actual cost pass-through from LCFS to retail gasoline or diesel prices is uncertain, that there is no correlation between historical LCFS credit prices and gasoline prices, and that the LCFS is not a major driver of overall retail fuel prices in California."**

The CFS is a cost-effective critical tool not only to effectively meet carbon emission reduction targets, but also as a mechanism that fosters technological innovation, supports a robust market for alternative fuels, provides long-term investment certainty and stimulates job creation and investment.

In addition, the CFS could provide compliance flexibility to producers of high carbon intensity transportation fuels to either invest in low carbon alternative fuels or to purchase credits from low carbon fuel producers. This market-based program enables regulated parties to make their own choice as to whether to invest in low carbon fuels directly or to continue to sell purely high carbon emitting fuels.

For example, California's LCFS is working: it's helping deliver clean air, good jobs and clean energy choices to all Californians and has strengthened the demand for low carbon fuels. California is the fourth-largest economy in the world: we can have clean fuels and grow our economy. The CFS is a powerful tool for supporting the commercialization of the fastest broad-market transitions to clean and low-carbon technologies.

Our company is a prime example of success from clean fuel standards and we look forward to continuing this success in Hawaii. **Please support SB 2999.**

Sincerely,

Ryan Kenny
Policy Director – Western U.S.
Clean Energy

LATE

TESTIMONY **ON SENATE BILL NO 2999** RELATING TO
**A CLEAN FUEL STANDARD**
Position: **Support**

To Senator Lorrain Inouye, Chair; Senator Brandon Elefante, Vice Chair; and committee members…

Simonpietri Enterprises LLC (SEL) is in **SUPPORT** the intent to create Clean Fuels Standard for the state of Hawai'i.

SEL is an O'ahu-based small business developing innovative ways to recycle some of Hawai'i's most challenging wastes into renewable fuels and other beneficial recycled-material products for use in Hawai`i. For the last 6 years we have been designing the Aloha Carbon integrated plant in Campbell Industrial Park to divert over 2000 tons per day of construction & demolition (C&D) debris from landfilling to be converted into renewable natural gas starting with a small manufacturing plant – the Aloha Sustainable Materials Recycling and Fertilizer Facility (Aloha SMRFF) – which will serve as the pilot plant for Aloha Carbon. The Aloha SMRFF will divert over 200 tons per day of construction & demolition (C&D) waste from landfilling along with invasive and pest infested biomass to be converted into fuel and other value-added products.

As a company whose technical expertise and innovation are focused in the areas of waste management, energy and the circular economy, we feel this measure encourages better management of waste and environmental stewardship which align with our mission as company and we would like to see it advance.

We appreciate the opportunity to testify on this measure, and urge your support for this bill.

Sincerely,

Marie-Joelle Simonpietri
President

*About Simonpietri Enterprises LLC*

Simonpietri Enterprises is a Kailua, Hawaii-based woman- and veteran-owned small business with ten employees, focused on technical innovation and first-of-kind project development of emerging clean and renewable technologies. Since founding in 2006, we have helped dozens of small and large industrial companies in Hawaii, the continental U.S., Australia, and Canada improve the environmental and economic sustainability of their operations through technical and business advice in renewable energy conversion, waste reduction and re-use, and greenhouse gas lifecycle impact reduction. Simonpietri Enterprises' founder and employees have participated in the strategy, planning, design, financing, development, construction, and energy efficiency/greenhouse gas reduction/sustainability renovation for over $400 million in new renewable and first-of-kind sustainable fuel projects over the past 15 years. Since launching the Aloha Carbon waste-to-fuel technical development process in August 2020, Simonpietri Enterprises is now developing renewable fuel production facilities in its own right, starting with the Aloha Sustainable Materials Recycling and Fertilizer Facility (SMRFF) in Kapolei,

Hawaii to divert wastes generated in Honolulu from landfilling and transform it to renewable fuel, organic fertilizer, and recycled-material building products.

Senate Committee on Transportation
Senator Lorraine R. Inouye, Chair
Senator Brandon J.C. Elefante, Vice Chair

Senate Committee on Agriculture and Environment
Senator Mike Gabbard, Chair
Senator Herbert M. "Tim" Richards, III, Vice Chair

February 17, 2026
3:01 p.m.
Conference Room 229

Thank you for the opportunity to submit testimony in strong support of SB 2999. My name is Cristina Cornejo and I am the Sr. Public Affairs Manager for Neste, the world's leading producer of sustainable aviation fuel and renewable diesel.

A Clean Fuel Standard (CFS) for Hawaii is an essential policy that will enable the state to meet its decarbonization goals, while reducing air and water pollution from the use of fossil fuels in our transportation system. Similar CFS programs have been implemented in California, Oregon, Washington, and Canada. Most recently, New Mexico enacted a CFS in March 2024 that will begin later this year. In addition, there are currently more than 10 additional states considering CFS policies, due to their effectiveness.

SB 2999 is NOT a mandate, nor is it a tax credit, but rather it is an incentive program designed to promote the decarbonization of all transportation fuels. CFS policies drive the adoption of lower-carbon transportation technologies, resulting in advanced competition and a diversity of fuel options for consumers. As an example, consumers in California have gone from 2 fuel types (gasoline and diesel) to more than 7 fuel types (gasoline, diesel, renewable diesel, electric, ethanol, biodiesel, hydrogen, and renewable compressed natural gas). This policy also drives substantial new investments in electric vehicle charging and hydrogen infrastructure at no cost to taxpayers.

One crucial element of a CFS is that it is a technology neutral policy that allows consumers to decide what fuels work best for them and their businesses. All transportation fuels can partake in a clean fuels market, and the policy is flexible enough to allow for new technologies that will come online in the future.

Another key component of SB 2999 is that it utilizes an independent third-party, science-based evaluation for all transportation fuels. The policy uses the GREET model, which was created by Argonne National Laboratory and is the worldwide standard methodology to calculate the carbon intensity of a given fuel. This model assesses fuel on a well-to-wheel basis and considers the full life cycle of a fuel to determine its carbon intensity (CI) score. This ensures that all fuels are scored

on an equal playing field, and the winners are those fuels with the lowest possible carbon intensity score. It incentivizes cleaner fuels while letting technologies compete.

In conclusion, a clean fuel standard is the most effective policy in reducing carbon emissions from the transportation sector by incentivizing the production and availability of lower carbon fuels. The State of Hawaii deserves access to cleaner fuels and protection of its treasured natural resources. SB 2999 is a significant piece of the decarbonization puzzle and we at Neste are proud to support this pivotal policy.

Cristina Cornejo, Sr. Public Affairs Manager, Neste

Phone: (361) 701-9922

Email: cristina.cornejo@neste.com

*Neste Background*

*Neste (NESTE, Nasdaq Helsinki) creates solutions for mitigating climate change and accelerating a shift to a circular economy. The company is the world's leading producer of sustainable aviation fuel (SAF) and renewable diesel, enabling its customers to reduce their greenhouse gas emissions. Neste refines waste, residues and other renewable raw materials to high-quality renewable fuels at its refineries located on three continents. The company's annual renewable fuels production capacity will be increased to 6.8 million tons in 2027.*

*Neste has high standards for sustainability, and the company has consistently been recognized by several leading sustainability indices.*

**SB-2999**
Submitted on: 2/16/2026 12:57:56 PM
Testimony for TRS on 2/17/2026 3:01:00 PM

| Submitted By | Organization | Testifier Position | Testify |
|---|---|---|---|
| Georgia L Hoopes | Individual | Oppose | Written Testimony Only |

Comments:

Aloha Committee!

There is not enough land or water in the state to produce biofuels domestically. Precious land and water should be used for local food production, not fuel. Biofuels will be imported from North and South America where they are grown in monoculture plantations of genetically modified crops, often directly or indirectly deforesting areas.

They all make pollution when burned, meaning that they are a short-term solution because state law requires zero greenhouse gas emissions by 2045.

Switching in less than 20 years from fossil fuels to biofuels, then again to supposedly carbon-free "electrofuels" will massively increase energy costs instead of simply phasing in one transition by electrifying and transitioning to conservation, efficiency, solar, wind, and energy storage.

Waste-based fuels, such as the plans to liquefy trash in Maui or construction and demolition waste in O‘ahu have many toxic chemicals involved, and will result in toxic ash and toxic air emissions. These experimental pyrolysis and gasification technologies have been a failure throughout the country and cannot operate commercially, but could suck up public subsidies before the failures become obvious.

Mahalo!

Georgia Hoopes, Kalaheo

**SB-2999**
Submitted on: 2/16/2026 1:59:10 PM
Testimony for TRS on 2/17/2026 3:01:00 PM

| Submitted By | Organization | Testifier Position | Testify |
|---|---|---|---|
| Eva-Maria von Bronk | Individual | Support | Written Testimony Only |

Comments:

I have owned my electric car on Maui since January 2023. Love driving it, but I live in a condo that does not have EV chargers (most condos on the West side don't). Therefor, I have to rely on public chargers. Unfortunately, there are very few and those that do exist either charge a fortune or don't work. This is counter-productive to Maui's goal for clean energy. I have to drive on the other side of the island to charge, hopeing that I can use them with my adapter (not all of them work that way) and that they are available and affordable. Another huge problem is the waste of water in our community. I know it's private, but please help & restrict use of sprinklers when it rains ....

**SB-2999**
Submitted on: 2/16/2026 2:59:10 PM
Testimony for TRS on 2/17/2026 3:01:00 PM

| Submitted By | Organization | Testifier Position | Testify |
|---|---|---|---|
| Theodore Metrose | Individual | Oppose | In Person |

Comments:

I oppose the proposed the proposed low carbon fuel standard because it has far to many options and exemptions. There should be not option for utility fuels that are mandated to mee the RPS .

**POLICY MEMORANDUM (prepared by MS Copilot)**

**Subject:** LCFS-Indexed SAF Credit for Hawai‘i (Single-Track Approach)
**Focus:** Local Production Only, With Phase-Out Upon Adoption of a Hawai‘i LCFS
**Date:** February 2026

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**1. Purpose**

This memo presents a **single-track policy concept** for Hawai‘i:
a **LCFS-indexed tax credit** for sustainable aviation fuel (SAF) produced in Hawai‘i and sold for use in Hawai‘i.

The goals are to:

- Keep **locally produced SAF in-state**, instead of exporting to California;
- Tie Hawai‘i’s support level to **actual California LCFS market conditions**;
- Provide a **natural phase-out mechanism** once Hawai‘i adopts its own LCFS.

This memo **does not** rely on foreign import incentives or airline credits—those can be added later as a second phase once this core concept is familiar and accepted.

**Summary for phase-one familiarization**

For clarity, here is the approximate value of LCFS credits in terms of dollars per gallon ($/gal) of SAF, based on recent California LCFS prices:

| Year | Average LCFS Price ($/metric ton) | Approximate Credit Value ($/gal SAF) |
|---|---|---|
| 2022 | $120 - $150 | $0.40 - $0.50 |
| 2023 | $70 - $90 | $0.23 - $0.34 |
| 2024 | $40 - $70 | $0.13 - $0.34 |

*Note:* These values assume a carbon intensity reduction typical for SAF (~60-70 gCO2e/gal avoided) and conversion factors from metric tons to gallons.

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**SB-2999**
Submitted on: 2/16/2026 3:05:44 PM
Testimony for TRS on 2/17/2026 3:01:00 PM

| Submitted By | Organization | Testifier Position | Testify |
|---|---|---|---|
| Daniel Holt | Individual | Oppose | Written Testimony Only |

Comments:

Simply reclassifying greenhouse gasses as 'green' is neither good science, effective leadership or helpful to the people of the islands - kill this bill!

Mahalo!

LATE

**SB-2999**
Submitted on: 2/16/2026 3:52:32 PM
Testimony for TRS on 2/17/2026 3:01:00 PM

| Submitted By | Organization | Testifier Position | Testify |
|---|---|---|---|
| Ken Stover | Individual | Oppose | Written Testimony Only |

Comments:

oppose

LATE

**SB-2999**
Submitted on: 2/16/2026 7:14:47 PM
Testimony for TRS on 2/17/2026 3:01:00 PM

| Submitted By | Organization | Testifier Position | Testify |
|---|---|---|---|
| Alice Abellanida | Individual | Oppose | Written Testimony Only |

Comments:

I oppose this bill.