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STATE OF HAWAII
DEPARTMENT OF TAXATION

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**TESTIMONY OF
GARY S. SUGANUMA, DIRECTOR OF TAXATION**

TESTIMONY ON THE FOLLOWING MEASURE:

S.B. No. 2376, S.D.2, H.D.1, Relating to the Renewable Fuels Production Tax Credit

BEFORE THE:

House Committee on Economic Development & Technology

DATE: Wednesday, March 25, 2026

TIME: 10:00 a.m.

LOCATION: State Capitol, Room 423

Chair Ilagan, Vice-Chair Hussey, and Members of the Committee:

The Department of Taxation (DOTAX) offers the following comments regarding S.B. 2376, S.D.2, H.D.1, for your consideration.

S.B. 2376, S.D.2, H.D.1, makes several amendments to section 235-110.32, Hawaii Revised Statutes (HRS), regarding the Renewable Fuels Production Tax Credit (RFPTC).

Subsection (a) is amended to increase the credit during the ten-year credit period from 20 cents to 85 cents per 76,000 British thermal units of renewable fuels using the lower heating value sold for distribution in Hawai'i. The bill also doubles the maximum credit amount that may be claimed by a taxpayer per taxable year from \$3.5 million to \$7 million. Additionally, the credit may only be claimed for "low lifecycle emissions renewable fuels," and no other tax credit may be claimed under this chapter for the costs used to claim a credit under section 235-110.32, HRS, for the taxable year.

This subsection is also amended to clarify that "taxpayers who previously claimed the tax credit for a single credit period for taxable years beginning before January 1, 2027, may claim another tax credit for taxable years beginning after December 31, 2026."

Subsection (f), regarding the \$20 million aggregate yearly cap, is amended to provide that in the event that the credit claims under this section exceed \$20 million for all eligible taxpayers in any given calendar year, the \$20 million will be allocated to eligible taxpayers in proportion to the total amount of renewable fuels production tax credit claims under this section for the calendar year.

Further, to the extent that the proportional allocation and application of the cap on the amount of the credit claimed by a single taxpayer pursuant to subsection (a) results in total credits lower than \$20 million, the difference between the total credits and the \$20 million will be allocated to any remaining eligible claims from taxpayers that have not exceeded the cap on the amount of the credit claimed by a single taxpayer pursuant to subsection (a) in proportion to the renewable fuels production tax credit claims for those taxpayers in the calendar year.

Additionally, if the amount of a taxpayer's credit is reduced due to the limitations noted above, the amount of the reduction will be available to the taxpayer to be used as a credit in the subsequent calendar year, but the credit shall not be carried over for any calendar year thereafter, and any carryover credit shall be subject to the limitations of this subsection.

Subsection (o) amends the definition of a "credit period" to mean a maximum period of ten consecutive years, beginning from July 1, 2026.

Definitions are added for "feedstock transportation emissions threshold," "lifecycle greenhouse gas emissions," "lifecycle greenhouse gas emissions reduction threshold," "low lifecycle emissions renewable fuels," and "product transportation emissions threshold," and conforming amendments are made to the definitions of "renewable feedstocks" and "renewable fuels."

The measure has a defective effective date of July 1, 3000, and applies to taxable years beginning after December 31, 2025.

DOTAX defers to the Hawaii State Energy Office (HSEO) regarding its ability to incorporate these changes and its ability to continue to administer the aggregate credit cap and the proportional credit allocations. DOTAX recommends, however, that the bill be amended to clarify that, if the total amount of credits applied in a year exceeds the aggregate amount, HSEO issue a certificate to the taxpayer stating the amount eligible to be claimed in the subsequent taxable year.

DOTAX notes that it can administer the tax law changes in this bill for taxable years beginning after December 31, 2025.

Thank you for the opportunity to provide comments on this measure.



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Testimony of
MARK B. GLICK, Chief Energy Officer

before the
HOUSE COMMITTEE ON ECONOMIC DEVELOPMENT & TECHNOLOGY

Wednesday, March 25, 2026
10:00 AM
State Capitol, Conference Room 423, and Videoconference

Providing Comments on
SB 2376, SD2, HD1

RELATING TO THE RENEWABLE FUELS PRODUCTION TAX CREDIT.

Chair Ilagan, Vice Chair Hussey, and Members of the Committee, the Hawai'i State Energy Office (HSEO) offers comments on SB 2376, SD2, HD1, which amends the Renewable Fuels Production Tax Credit (RFPTC), Section 235-110, Hawai'i Revised Statutes (HRS). Proposed amendments 1) increase the RFPTC from 20 cents to 85 cents per seventy-six thousand British thermal units (btu) of renewable fuels using lower heating value (LHV) sold for distribution in the state, 2) increases the per-taxpayer cap from \$3.5 million to \$7 million and introduces a limited rollover mechanism which applies if the total amount of credits applied for exceeds the annual cap, the remaining credits may be applied in the subsequent year, 3) adds lifecycle emissions thresholds for eligibility, and 4) allows taxpayers who previously claimed the tax credit for a single credit period before January 1, 2027 to claim another tax credit for taxable years beginning after December 31, 2026. HSEO appreciates many of the amendments reflected in HD1 and recognizes the numerous changes this measure has undergone as it has moved through the legislative process. HSEO offers the following comments and context on the provisions of the bill and defers to the Department of Taxation on any additional administrative or compliance considerations.

The measure proposes a credit of 85 cents per 76,000 btu based on the LHV of renewable fuel. While expressed on an energy basis, this equates to a substantial per-gallon subsidy when translated into commonly understood fuel units. Converting this value, the credit corresponds to roughly \$1.40 per gallon for sustainable aviation fuel (SAF), \$1.43 per gallon for renewable diesel, and \$1.32 per gallon for biodiesel (B100), based on typical energy content. These values depend on the assumed LHV per gallon, which can vary slightly by feedstock and refining process. While such a credit could accelerate deployment and support local renewable fuel production, it also warrants careful consideration of total program cost, long-term fiscal exposure, and whether the incentive level is appropriately calibrated to achieve desired outcomes.

HSEO recognizes the critical importance of reducing greenhouse gas (GHG) emissions in the transportation sector and aviation subsector. In the *2023 Pathways to Decarbonization Report* to the Legislature, HSEO identified low-carbon fuels as a potentially important tool for reducing emissions in hard-to-electrify sectors. However, the report also emphasized that the climate benefits of alternative fuels are highly dependent on robust lifecycle GHG accounting, transparent verification methodologies, and strong safeguards against over-crediting fuels that deliver marginal or uncertain emissions reductions. HSEO therefore supports the additional lifecycle greenhouse gas threshold criteria and more stringent thresholds applied in this bill.

Regarding the per-taxpayer cap, HSEO defers to the respective finance committees on budget constraints and the appropriate cap level, and notes the proposed increase from \$3.5 million to \$7 million warrants careful consideration of overall fiscal impacts.

The bill also introduces a rollover mechanism (page 5, lines 15-21 and page 6, lines 1-11) under which excess claims are treated as having been applied for in a subsequent year. While this provision may improve predictability for project developers, it raises concerns regarding long-term budget management and fiscal exposure. In practice, the rollover mechanism could result in a backlog of unpaid credits if claims consistently exceed the annual cap. Over time, this may lead to a portion, or potentially all, of a future year's allocation being effectively pre-committed to prior-year production. Although the HD1 limits rollover to a single year, the interaction of this provision across

multiple years of oversubscription remains unclear and could introduce administrative and budgeting challenges. Additionally, while the provision preserves the value of the credit for taxpayers, it may result in delayed realization and unproportional distribution across years.

Given these considerations, HSEO respectfully requests that the committee remove the proposed rollover language (page 5, lines 16-21 and page 6, lines 1-11) and maintain the language currently in statute (page 5, lines 15-16). This will maintain clearer fiscal boundaries and avoid unintended long-term obligations for the State.

Thank you for the opportunity to testify.



March 25, 2026

**COMMENTS TO
SB 2376 SD2 HD1
RELATING TO THE RENEWABLE FUELS PRODUCTION TAX CREDIT**

House Committee on Economic Development & Technology
The Honorable Greggor Ilagan, Chair
The Honorable Ikaika Hussey, Vice Chair

Wednesday, March 25, 2026, 10:00 a.m.

VIA VIDEOCONFERENCE
Conference Room 423
State Capitol
415 South Beretania Street

Chair Ilagan, Vice Chair Hussey, and Members of the Committee,

Island Energy Services, LLC (“IES”) offers the following comments on SB 2376 SD2 HD1, which proposes the establishment of a sustainable aviation fuel tax credit program for the State.

- The current language of SB 2376 SD2 HD1 indicates it is intended to “support local production of SAF and other renewable fuels” the State goals are best served by allowing any imported finished sustainable aviation fuel and other renewable fuels produced outside of Hawai’i to qualify for the same proposed tax credit provided it meets the same lifecycle greenhouse gas emission threshold.

We thank the House Committee on Economic Development & Technology for hearing this bill and thank you for the opportunity to testify.

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



**TESTIMONY OF TINA YAMAKI, MANAGING DIRECTOR
HAWAII TRANSPORTATION ASSOCIATION**

March 25, 2026

SB 2376 SD2 HD1 RELATING TO THE RENEWABLE FUELS PRODUCTION TAX CREDIT.

Aloha Chair Iligan and members of the House Committee on Economic Development & Technology. I am Tina Yamaki, Managing Director of the Hawaii Transportation Association and I appreciate this opportunity to testify.

The Hawaii Transportation Association (HTA Hawaii) was founded in 1938 and incorporated in 1963, and is a private, non-profit trade organization dedicated to the service and assistance to the commercial ground transportation industry in the State of Hawaii. Our members include family owned small and medium sized businesses, independent owner operators, and national motor carriers range from delivery services to passenger carriers - as well as allied industry partners.

The HTA Hawaii supports SB 2376 SD2 HD1. This measure expands the provisions of the renewable fuels production tax credit; applies to taxable years beginning after December 31, 2025; and is effective 7/1/3000.

This measure clarifies that the Renewable Fuels Production Tax Credit may only be claimed by taxpayers for which qualified renewable fuels production costs are incurred within the State of Hawai'i and whose renewable fuels are sold for distribution within the State. This ensures that the tax credit directly supports in-state production and advances Hawai'i's energy independence and sustainability goals, rather than subsidizing out-of-state activities.

This measure also allows taxpayers to qualify for a separate ten-year credit period for each separate qualified renewable fuels production that independently meets eligibility requirements. This provision appropriately recognizes that renewable fuel projects are often developed in phases or as distinct facilities, and it provides certainty for long-term investment while maintaining clear eligibility standards.

However, this measure does not explicitly provide that an existing entity may qualify for an additional ten-year credit period, as included in other versions of the Production Tax Credit. This omission is significant because, without that provision, some local companies would not qualify for the credit. Other iterations of the Production Tax Credit expressly allow for an additional ten-year claim period, and we believe similar language should be included here to ensure consistency and eligibility.

In addition, the bill extends the timeframe for taxpayers to file certain required statements with the Hawai'i State Energy Office. This added flexibility improves compliance and administrative efficiency, particularly for smaller producers that may have limited staffing and resources.

Of particular importance, this measure helps ensure that smaller, local renewable fuel producers are able to access and benefit from this tax credit. By tying eligibility to in-state production and distribution, and by allowing credits for independently qualifying projects, the bill promotes a more equitable and inclusive renewable fuels market. This supports local businesses, encourages innovation, and strengthens Hawai'i's clean energy economy.

Mahalo for this opportunity to testify.



Testimony of
ALASKA AIRLINES and HAWAIIAN AIRLINES

Before the House Committee on
Economic Development & Technology

Wednesday, March 25, 2026
10:00 A.M.
Hawai'i State Capitol, Room 423

In consideration of
SENATE BILL 2376, SD2 HD1
RELATING TO THE RENEWABLE FUELS PRODUCTION TAX CREDIT

The Honorable Greggor Ilagan, Chair of the Committee on Economic Development & Technology
The Honorable Ikaika Hussey, Vice Chair of the Committee on Economic Development & Technology
Members of the Committee on Economic Development & Technology

Re: Testimony with Comments on S.B. 2376, SD2 HD1 – Relating to the Renewable Fuels Production Tax Credit

Chair Ilagan, Vice-Chair Hussey and members of the committee,

Alaska Airlines and Hawaiian Airlines respectfully offer comments on S.B. 2376, SD2 HD1, relating to the Renewable Fuels Production Tax Credit (RFPTC), and appreciate the continued work of the Legislature to strengthen Hawai'i's renewable fuels framework.

We remain supportive of the overall intent of this measure to incentivize in-state renewable fuel production, reduce lifecycle greenhouse gas emissions, and advance Hawai'i's energy security goals. The transition to a more performance-based framework tied to lifecycle emissions, along with enhanced reporting and accountability, represents a meaningful step forward in aligning Hawai'i's policy with federal standards and market expectations.

Importantly, under the Navahine Settlement and the Hawai'i Department of Transportation's Energy Security and Waste Reduction Plan, the State has a clear obligation to advance strategies that decarbonize the transportation sector, including aviation. As such, policies that shape Hawai'i's renewable fuels market should be inclusive of pathways that directly support emissions reductions in aviation.

However, we respectfully note a significant concern with the current draft.

Exclusion of Sustainable Aviation Fuel (SAF)

As currently structured, S.B. 2376, SD2 HD1 removes sustainable aviation fuel (SAF) and renewable jet fuel from the definition of eligible renewable fuels.

This represents a significant policy gap, particularly in the context of the State's broader climate and energy commitments.

The aviation sector is one of the most difficult segments of the transportation system to decarbonize, and SAF is the primary and most viable pathway to reduce emissions from air travel in the near- to mid-term. Unlike ground transportation, aviation does not yet have scalable electrification alternatives, making liquid fuels essential for long-haul connectivity.

For Hawai'i in particular, this issue is even more acute.

As an island state that depends on aviation for economic activity, tourism, and the movement of people and goods, Hawai'i has both a unique reliance on aviation and a unique opportunity to lead in the development of SAF. Excluding SAF from eligibility under the RFPTC risks:

- Limiting Hawai'i's ability to attract investment in SAF production facilities
- Creating an uneven playing field relative to other renewable fuels
- Missing a critical opportunity to align state policy with federal incentives
- Undermining the State's ability to meet its obligations to decarbonize aviation under the Navahine Settlement and HDOT's Energy Security and Waste Reduction Plan
- Slowing progress toward statewide decarbonization goals, particularly in the transportation sector

Alignment with Legislative Intent

We understand and appreciate the Committee's focus on ensuring that renewable fuel incentives deliver local economic benefit, particularly through the use of locally sourced feedstocks.

We support this objective, and we believe it's important to highlight that local renewable fuel production, regardless of the origin of the renewable feedstock, has economic and energy security benefits for the state.

Importantly, the inclusion of SAF is not inconsistent with this goal. In fact, SAF production can strongly reinforce it. A local SAF industry that relies on imported and locally sourced or regionally proximate feedstocks can:

- Generate local jobs in production, refining, and logistics
- Support Hawai'i's agricultural sector
- Create demand for crops such as oilseeds and other renewable feedstocks
- Maximize in-state economic circulation

Recommendation

Given the importance of aviation to Hawai'i's economy, energy security, and climate obligations, we respectfully recommend that the Committee:

- 1. Reinstate sustainable aviation fuel (SAF) as an eligible renewable fuel under SB 2376.**

This can be accomplished by restoring SAF within the definition of “renewable fuels” and ensuring it is treated consistently within the lifecycle emissions framework established in the bill.

2. Maintain flexibility for feedstocks while continuing to support local agriculture

Allowing both local and imported feedstocks for locally produced fuels provides a practical pathway to grow the market in the near term while building local feedstock capacity over time. To achieve immediate reductions in greenhouse gas emissions, the credit should be usable to its full extent, including for imported feedstocks that are processed in-state and directly support local fuel production and community benefit.

3. Include a dedicated SAF “addier” to ensure parity with renewable diesel and other competing fuel pathways.

Specifically, we recommend establishing an additional \$1.00 per gallon for fuels that qualify as sustainable aviation fuel (SAF).

This targeted adder appropriately recognizes:

- The additional technical and economic barriers associated with SAF production, including stricter ASTM specifications, more complex refining processes, lower yields, and lower value from certain federal incentive programs
- The critical role SAF plays in advancing Hawai‘i’s decarbonization strategy, particularly in the aviation sector where alternatives remain limited

Without a SAF-specific adder, producers are more likely to prioritize renewable diesel and other fuels with lower production costs, limiting the development of a SAF market in Hawai‘i.

Establishing parity through a targeted incentive will help ensure that SAF production is economically viable and competitive.

Reinclusion of SAF, paired with the targeted adder, will help ensure that Hawai‘i’s renewable fuels policy is:

- Comprehensive across all major transportation sectors
- Competitive in attracting private investment
- Aligned with federal policy and emerging markets
- Positioned to make progress toward the State’s climate commitments, including the decarbonization of aviation
- Structured to deliver long-term economic and environmental benefits for Hawai‘i

Mahalo for the opportunity to provide testimony.



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March 25, 2026

HEARING BEFORE THE
HOUSE COMMITTEE ON ECONOMIC DEVELOPMENT & TECHNOLOGY

TESTIMONY ON SB 2376, SD2, HD1
RELATING TO THE RENEWABLE FUELS PRODUCTION TAX CREDIT

Conference Room 423 & Videoconference
10:00 AM

Aloha Chair Ilagan, Vice-Chair Hussey, and Members of the Committee:

I am Brian Miyamoto, Executive Director of the Hawai'i Farm Bureau (HFB). Organized since 1948, the HFB is comprised of 1,800 farm family members statewide and serves as Hawai'i's voice of agriculture to protect, advocate, and advance the social, economic, and educational interests of our diverse agricultural community.

The Hawai'i Farm Bureau supports SB 2376, SD2, HD1, which strengthens and clarifies the renewable fuels production tax credit, providing greater certainty for in-state renewable fuel production. For agriculture, this credit represents a potential value-added opportunity for locally grown crops, agricultural residues, and byproducts to serve as renewable fuel feedstocks.

Locally grown biofuel feedstocks can provide farmers with additional revenue streams, particularly when cultivated on marginal or underutilized lands. In some cases, these crops may also function as cover crops, contributing to improved soil health, reduced erosion, and more sustainable land management practices while still producing marketable outputs. Integrated systems that utilize agricultural residues and waste streams can further generate co-products such as livestock or aquaculture feed, strengthening both the agricultural and energy sectors while keeping economic activity within Hawai'i.

Market certainty is critical for farmers considering whether to invest in new crops or production systems. Renewable fuel feedstock production requires forward planning, acreage commitments, and long-term agreements. The tax credit must provide a sufficiently strong and predictable market signal to support participation at the farm level. As this measure moves forward, we encourage continued collaboration to ensure the credit structure meaningfully supports in-state agricultural production and aligns with Hawai'i's cost environment.

Renewable fuel opportunities can complement agriculture, but only if viable agricultural operations are able to persist and grow. Continued attention to land access, water availability, labor, invasive species pressures, transportation costs, and energy costs remains essential to ensuring that agriculture can fully participate in Hawai'i's renewable energy future.

Thank you for the opportunity to provide testimony.



March 25, 2026

**TESTIMONY IN SUPPORT OF SB 2376 SD2 HD1
RELATING TO THE RENEWABLE FUELS PRODUCTION TAX CREDIT**

House Committee on Economic Development and Technology (ECD)
Representative Greggor Ilagan, Chair
Representative Ikaika Hussey, Vice Chair

March 25, 2026, 10:00 AM
Conference Room 423
State Capitol
415 South Beretania Street

Chair Ilagan, Vice Chair Hussey, and Members of the Committee,

Thank you for the opportunity to provide testimony in **SUPPORT** of **SB 2376 SD2 HD1**, Relating to the Renewable Fuels Production Tax Credit. We respectfully urge the Committee to advance this measure with the amendments proposed by the Hawaii Renewable Fuels Coalition to ensure it fulfills its purpose of effectively supporting Hawaii-based renewable fuel production and providing economic benefits to a broad range of local businesses and sectors.

Specifically, we urge you to add “Camelina” under the definition of “Renewable feedstocks” under section (3), which already includes other oil crops including “algae, canola, jatropha, palm, soybean, and sunflower”.

By focusing on objective environmental performance standards, this policy can maximize local economic opportunity while advancing Hawai‘i’s climate and long-term energy goals. This will help establish a new agricultural market by providing an additional credit of \$1 per gallon for low lifecycle emissions renewable fuels, which can be produced from locally grown renewable feedstocks. At the same time, imported feedstocks will be necessary to meet capacity demands, operate consistently, and scale. Allowing both local and imported feedstocks, within the lifecycle standards already in the bill, provides a practical path to grow the market now while building out local supply over time. We respectfully urge you to amend the bill to allow for both local and imported feedstocks.

Pono Pacific is Hawai‘i’s first and largest private natural resource conservation company, providing land management, restoration services, sustainable agricultural development, renewable energy, and eco-asset development for projects throughout the state. Our work is



focused on activating working lands, increasing food security and community engagement, and protecting natural resources to build a more resilient future for Hawai'i.

Finding viable uses for agricultural lands that promote environmental sustainability while generating positive economic returns is a critical need for Hawai'i. Locally grown biofuel feedstocks such as camelina can be grown in rotation with food crops or on currently fallow land, improving soil health and reducing erosion. Camelina trials completed in 2025 across Oahu, Maui and Kauai produced encouraging results, averaging approximately 1,200 pounds of seed per acre, and local farmers, ranchers, and feed producers have expressed strong interest in the crop's potential. Pono Pacific recently entered into an agreement with HARC to continue trials of Camelina on Oahu through 2026 with the goal of improving both yield per acre and oil content through further research and development.

Camelina requires less water and fertilizer than traditional row crops, making it well suited to Hawai'i's diverse landscapes. In addition to supplying low-carbon feedstock for renewable fuels, camelina produces nutritious meal that can be used as feed for cattle and chickens or processed into pellets for aquaculture feed, creating multiple revenue streams from a single crop. By creating a stable demand for these crops and their byproducts, the renewable fuels industry can help revitalize rural communities, create new jobs, and diversify farm income streams across the islands.

We urge you to pass this legislation with amendments. Thank you for your time and consideration.

Mahalo,

Chris Bennett
Vice President of Sustainable Energy Solutions
Pono Pacific Land Management, LLC
Pono Energy Inc.



Camelina FAQs

What other industries can benefit from growing Camelina?

Beyond supplying oil for renewable fuel production at the Par Hawaii refinery, camelina creates meaningful value through its co-products, particularly camelina meal. The high-protein seed cake remaining after oil extraction can be used as livestock feed for cattle and poultry, incorporated into aquaculture pellets, thereby reducing Hawai'i's dependence on costly imported feed inputs. This supports local ranchers, dairies, egg producers, and aquaculture operations while keeping more dollars circulating within the state. In addition, we have had discussions with companies exploring the use of camelina meal as a feedstock for bio-based materials, including bioplastics, which could open an entirely new value-added manufacturing pathway in Hawai'i. These diversified end uses strengthen the overall economics of the crop, create multiple revenue streams from a single acre, and help build a more resilient, circular agricultural and clean energy economy.

What agricultural lands will be used?

According to recent informational testimony to the Hawai'i Senate from the Hawai'i Farm Bureau and others, Hawai'i farms are on the decline – down 10% from 2017 to 2022. Efforts are underway to expand Hawai'i agriculture, expand Hawai'i lands in production, and expand the availability of Hawai'i-grown feed for our ranching communities. Our focus is on former sugarcane/pineapple lands with low opportunity cost, reactivating these lands for both renewable fuel feedstocks and food production, and at the same time mitigating fire hazards from unmanaged lands. There are tens of thousands of acres of these lands available on Kaua'i, Maui County, Oahu and Hawai'i Island. These lands are held by private entities such as Kamehameha Schools, Maui Land and Pineapple, Grove Farm, Gay & Robinson, as well as various government agencies.

Although we are several years from commercial production, we are engaged in ongoing discussions with many of these landowners to enter into potential lease agreements. We currently hope to scale the project up to 1,500 acres by the end of 2027, and up to 25,000 acres over the following 5 years focusing on privately held fallow lands previously in sugar and pineapple production, as well as rotating with food production on currently active lands.

What are the water requirements for growing Camelina?

Pono Pacific recognizes that water use and management in Hawai'i have historically been sensitive and complex issues, and we remain mindful of that context in all aspects of our work.



Camelina is not a water intensive plant, and in reality, camelina does not like ‘wet feet’ (too much water). A combination of 8-12 inches of rainfall and irrigation across its 80-day growing cycle is all that is required, with some producers on the Continent recommending even lower rates of 4-6”. Germination and emergence, then pre-flowering, are the critical stages for irrigation. Camelina needs good soil moisture for a uniform stand establishment and even germination. Very limited watering, if any, is recommended after flowering due to lodging commonly occurring. This works out to approximately 2,715 gallons per acre per day – again, a combination of rainfall and irrigation. Here is a comparison to other common Hawai’i-grown crops, per information from the Hawai’i Department of Agriculture ([AGRICULTURAL WATER USE AND DEVELOPMENT PLAN](#)):

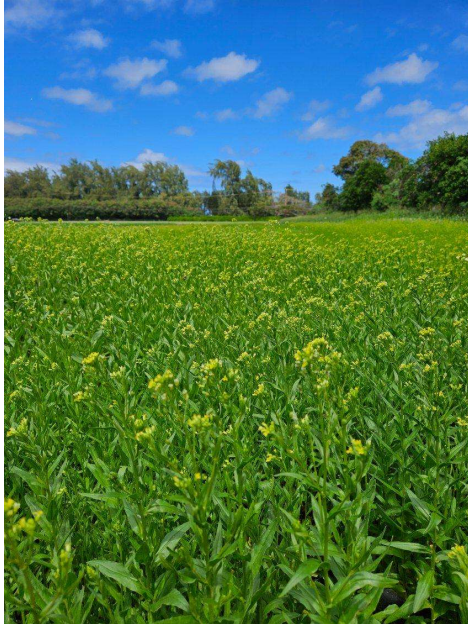
HDOA IRRIGATION WATER USE GUIDELINES (2004 AWUDP)

Crop	Water Use Rate (gals/acre/day)	Crop	Water Use Rate (gals/acre/day)
Alfalfa/Corn (grain)	7,700	Orchids	3,700
Aquaculture	145,000	Papaya	5,000
Dendrobium	4,000	Passion Fruit	10,000
Field Crops (grass & seed)	6,700	Pineapple	1,350
Foliage Plants	4,000 - 6,000	Protea	2,000-2,500
Forage Crops	7,400	Sugarcane (drip)	6,700
Guava	4,400	Sugarcane (furrow)	10,000
Leafy Vegetables (drip)	4,050	Taro (Asian)	4,000 - 8,000
Leafy Vegetables (sprinkler)	5,400	Taro (dryland)	5,400
Macadamia Nuts	4,400	Taro (wetland)	80,000 - 100,000
Nursery (potted plants)	6,000	Vegetables	6,700

Takeaway: Although the exact amount can vary significantly depending on several factors, Camelina’s low water requirement, combined with its short cycle, makes it attractive for regions where water resources are limited.



Camelina flowering on Oahu



Camelina seed pods on Maui



Camelina field on Kauai



Camelina field on Kauai





TESTIMONY TO THE COMMITTEE ON ECONOMIC DEVELOPMENT & TECHNOLOGY

10:00 AM, March 25, 2026

Conference Room 423 & Via Videoconference

SB 2376 HD1

Chair Ilagan, Vice Chair Hussey, and Members of the Committee,

Hawai'i Gas respectfully submits this testimony in support of SB 2376 HD1.

Hawaii Gas is the state's only regulated gas utility, providing essential energy services to homes, businesses, and critical facilities across all islands. The company is committed to Hawaii's transition to a cleaner, more sustainable energy system by advancing renewable fuels such as renewable natural gas and hydrogen while maintaining the reliable infrastructure needed to keep energy affordable and resilient for Hawaii's communities.

SB 2376 HD1 meaningfully strengthens the Renewable Fuels Production Tax Credit by increasing the per-unit credit and annual taxpayer cap, which will better support investment in renewable fuel production.

The bill reinforces the State's renewable energy goals while encouraging private investment in diverse types of renewable fuels that can lower the state's carbon emissions. Renewable fuel production investments in Hawaii are in the early and growth stage, especially in energy sectors such as firm, dispatchable generation. Maintaining this tax credit will help to bolster investments by a variety of participants.

For Hawaii Gas, SB 2376 HD2 supports ongoing efforts to decarbonize our fuel mix.

Finally, the bill expands eligible renewable feedstocks and fuels, supporting a broader range of technologies that can reduce emissions and displace imported fuels.

Thank you for your consideration.

**TESTIMONY ON SENATE BILL NO 2376, SD2, HD1 RELATING TO
RENEWABLE FUELS**

Position: **Support**

To Representative Greggor Ilagan Chair; Representative Ikaika Hussey Vice Chair; and Members of the Committee on Energy & Environmental Protection:

Simonpietri Enterprises LLC (SEL) **SUPPORTS** the intention of this measure.

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 better of 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 and remanufacture that waste to displace over 10,000 tons per year of imported fossil fuels, fertilizers, and building materials for Hawai'i. This facility is the first step to demonstrating our Aloha Carbon manufacturing process to manufacture pipeline-quality renewable fuel from solid wastes – 100% of which are generated in Honolulu. Even with modest fuel and fertilizer production, we anticipate this initial project to have sizable benefits that will support the state's emission reduction and energy resilience goals, while creating other economic opportunities.

The cost to develop energy infrastructure projects in Hawai'i is a limiting factor for many companies especially when considering the efforts invested in project development and engineering to mature our innovations from concept to pilot scale. The implementation of a renewable fuel tax credit incentivizes and helps smaller businesses, like ours, developing these types of projects to contribute their innovative solutions with greater success. While the 20-cent level is a step in the right direction, if truly serious about enticing production of renewable fuels at meaningful scale by new companies, we would like to urge the committee to consider recommendations proposed by the Hawai'i Renewable Fuels Coalition.

Comments for Consideration: We would also ask that the measure be amended to have construction and demolition (C&D) debris added to the list of "renewable feedstocks" to produce eligible fuels. Hawaii Gas's IRP identified C&D waste as the largest viable feedstock readily available on island to produce fuel at scale. While there have been concerns previously raised about the various contaminants in C&D debris that keep it from being recycled currently, our company has been working to develop the technology to safely do so and have a recognized patent for the process. By opening up the feedstock to include C&D debris, this measure would stimulate greater environmental impact through waste reduction and related circular economy benefits.

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

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.



TESTIMONY TO THE COMMITTEE ON ECONOMIC DEVELOPMENT & TECHNOLOGY

10:00 AM, March 25, 2026
Conference Room 423 & Via Videoconference

SB 2376 HD1

Chair Ilagan, Vice Chair Hussey, and Members of the Committee,

Hawaii Clean Power Alliance (HCPA) **supports SB 2376 HD1**, which expands the provisions of the renewable fuels production tax credit.

This bill strengthens the Renewable Fuels Production Tax Credit by establishing lifecycle greenhouse gas emissions standards, prioritizing in-state fuel use, and improving program accountability while maintaining appropriate fiscal guardrails.

We note that while HD1 strengthens emissions standards and prioritizes in-state use, the allocation framework in SD1 more closely aligns with how renewable fuel projects are developed and financed. In particular, allowing separate credit periods for independently qualifying facilities provides clearer investment signals and supports incremental development without increasing the overall fiscal cap. Retaining this project-based structure would improve the effectiveness of the credit while maintaining the policy objectives of the measure and encouraging additional investments in the state.

We request consideration of page 2 lines 10-18 be replaced with:

Each taxpayer, together with all of its related entities as determined under section 267(b) of the Internal Revenue Code and all business entities under common control, as determined under sections 414(b), 414(c), and 1563(a) of the Internal Revenue Code, shall ~~not~~ be eligible for ~~[more than a single]~~ a separate ten-year credit period[-] for each separate renewable fuel production facility located at a separate physical site that meets the eligibility requirements of this section.

Thank you for the opportunity to testify.



TESTIMONY IN SUPPORT OF SB 2376 SD2 HD1 RELATING TO THE RENEWABLE FUELS PRODUCTION TAX CREDIT

Aloha Chair Ilagan, Vice Chair Hussey and Members of the House Committee on Economic Development & Technology,

My name is Nahelani Parsons, and I am the Executive Director of the Hawai'i Renewable Fuels Coalition (HRFC). On behalf of our coalition members across the energy, agriculture, labor, and transportation sectors, we offer our strong support for SB2376 SD2 HD1, which updates the Renewable Fuels Production Tax Credit (RFPTC). We respectfully urge the Committee to advance this measure with targeted amendments to ensure it fulfills its intended role as a catalyst for a new, locally rooted renewable fuels economy.

The HRFC is a diverse alliance of stakeholders working to achieve Hawai'i's renewable energy goals. Our founding members include:

- **Hawaiian/Alaska Airlines:** Leaders in adopting Sustainable Aviation Fuel (SAF) to decarbonize the aviation sector.
- **Pono Pacific:** Hawai'i's largest natural resource conservation company, advancing oil crop feedstock cultivation to support renewable fuel production.
- **Par Hawai'i:** The state's largest energy supplier, investing over \$100 million in renewable fuel production technology to strengthen energy security and sustainability.

In addition to these partners, HRFC collaborates with:

Pacific Biodiesel, a local producer of biodiesel. The Hawai'i Farm Bureau, representing 1,800 farm families statewide, to support renewable feedstock cultivation and enhance food and energy security. Ranchers, dairy farmers, and conservationists, such as Meadow Gold and Haleakalā Ranch, contributing to Hawai'i's resilience and self-sufficiency. Airlines for America, which advocates for SAF adoption nationwide to reduce aviation emissions.

Hawai'i Renewable Fuels Coalition members:

Airlines for America	Alaska Airlines	Haleakala Ranch
Hawaii Farm Bureau	Hawaii Fuelling Facilities Corp	Hawaiian Airlines
HECO	ITOCHU Corporation	Japan Airlines
Kuilima Farm	Meadow Gold Hawaii	Pacific Biodiesel
Par Hawaii	Pono Pacific	United Steelworkers

The Role of the Coalition and Why This Credit Matters

The Hawai'i Renewable Fuels Coalition is a broad, cross-sector partnership representing agriculture, energy, labor, transportation, and community stakeholders, working to advance a renewable fuels industry that supports our climate goals, energy security, and economic development.

We appreciate the progress reflected in SB2376 SD2 HD1 and the Legislature's recognition that the Renewable Fuels Production Tax Credit is a critical tool in advancing the response to the *Navahine v. HDOT* climate settlement. By strengthening the credit, the State is creating a real pathway to support the production of renewable fuels such as sustainable aviation fuel and renewable diesel.

With transportation contributing nearly half of Hawai'i's greenhouse gas emissions, and aviation fuel consumption exceeding 700 million gallons annually, this policy represents one of the most practical and scalable opportunities to reduce emissions while strengthening local economic resilience and supporting Hawai'i-based jobs and agriculture.

Renewable fuels create new demand for agricultural production, bring underutilized lands back into use, support skilled local jobs, and keep energy dollars circulating within Hawai'i. The Renewable Fuels Production Tax Credit is the foundation of that system, and ensuring it is properly calibrated will determine whether that system succeeds at scale.

Support SB2376 SD2 HD1 With Amendments

We offer two targeted amendments to expand on the intent of this measure and strengthen its overall effectiveness.

First, maintain flexibility for feedstocks while continuing to support local agriculture.

We support the lifecycle framework and agree that it appropriately prioritizes and incentivizes the use of local feedstocks. At the same time, we recognize that imported feedstocks will be necessary in the early years to ensure projects can operate reliably and scale effectively.

Allowing both local and imported feedstocks for fuels produced within Hawai'i provides a practical and balanced pathway, one that enables immediate market growth while local agricultural supply chains are developed over time.



To make a meaningful impact on greenhouse gas emissions today, it is essential that this credit can be fully utilized, including for fuels produced in the state using imported renewable feedstocks. This approach ensures near term emissions reductions while building toward greater local self sufficiency.

Importantly, local production of renewable fuels, regardless of feedstock origin, delivers clear economic and energy security benefits for Hawai'i. It keeps investment within the state, supports local jobs, and reduces our dependence on imported petroleum as we transition to a clean energy future.

Second, ensure sustainable aviation fuel is competitive within the credit structure.

Respectfully asking for an additional credit value for SAF to be added, this is intended to level the playing field with renewable diesel by reducing the relative margin gap between the two fuels and ensure producers can allocate some of their production volume to SAF and make progress towards decarbonizing the aviation sector in our state.

As currently structured, producers are likely to prioritize renewable diesel production because it is more profitable than sustainable aviation fuel production for a number of reasons, including higher physical fuel value, higher yield, lower costs, higher incentive from certain federal programs, and higher base Hawaii RFPTC value.

Without a targeted incentive, sustainable aviation fuel may not be produced at a meaningful scale, despite representing the largest opportunity to reduce transportation emissions in Hawai'i. Aviation consumes over 700 million gallons of fuel annually, making it the single largest opportunity for emissions reduction. Ensuring that sustainable aviation fuel can compete economically is critical if we want this policy to achieve real climate impact.

For that reason, we recommend adding an additional credit value for sustainable aviation fuel to ensure it is part of the outcome, not left behind by market dynamics.

These amendments support local agriculture, enable market growth, and help ensure Hawai'i achieves the maximum possible reduction in greenhouse gas emissions.

We respectfully urge the Committee to pass this measure with amendments.

Nahelani Parsons,

Executive Director, Hawai'i Renewable Fuels Coalition



March 25, 2026

**TESTIMONY ON SB 2376 SD2 HD1
RELATING TO THE RENEWABLE FUELS PRODUCTION TAX CREDIT**

House Committee on Economic Development & Technology
Representative Greggor Ilagan, Chair
Representative Ikaika Hussey, Vice Chair

Wednesday, March 25 at 10:00 a.m.
State Capitol, Conference Room 423

Aloha Chair Ilagan, Vice Chair Hussey, and members of the Committee,

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.

Thank you for the opportunity to **support the intent** of SB 2376 SD2 HD1, Relating to the Renewable Fuels Production Tax Credit.

We appreciate the improvements incorporated in the HD1. But, to more effectively support Hawai'i based renewable fuel production and align with the State's climate and energy security goals, we respectfully request two targeted enhancements that directly reduce end-user costs:

- \$1.00 per diesel-gallon-equivalent for low-lifecycle-emissions renewable fuels
- \$1.00 per gallon for sustainable aviation fuel (SAF)

These additions are essential to narrowing the cost gap between renewable fuels and imported petroleum. Without them, Hawaii-produced renewable fuels will remain significantly more expensive than fossil fuels and will be diverted to higher-value West Coast markets.

We also note that Par Hawai'i is partnering with Pono Pacific to expand the availability of locally sourced feedstock, an important step in developing a homegrown renewable energy value chain. However, until those efforts scale, we must continue to rely on imported feedstock. Under current transportation emissions thresholds and other lifecycle accounting requirements, this reliance can limit the ability to claim the full value of available tax incentives, placing local renewable fuel production at a competitive disadvantage.

Par Hawaii has invested over \$100 million to construct Hawai'i's largest renewable fuels manufacturing facility at Kapolei, expected to produce 61 million gallons per year of renewable diesel, sustainable aviation fuel, and renewable naphtha. We believe these amendments provide the level of certainty and incentive strength needed to ensure renewable fuels produced in Hawaii stay in Hawaii.

Mahalo for the opportunity to offer comments, and we request the enhanced amendments.

TAX FOUNDATION OF HAWAII

735 Bishop Street, Suite 417

Honolulu, Hawaii 96813 Tel. 536-4587

SUBJECT: INCOME, Restricts Renewable Fuels Production Tax Credit to Renewable Fuels Produced in State

BILL NUMBER: SB 2376 SD2 HD1

INTRODUCED BY: EEP

EXECUTIVE SUMMARY: Expands the provisions of the renewable fuels production tax credit. Applies to taxable years beginning after December 31, 2025. Effective 7/1/3000. (HD1)

SYNOPSIS: Amends section 235-110.32(a), HRS, to increase the tax credit from 20 cents to 85 cents per seventy-six thousand British thermal units of renewable fuels. Additionally, increases the maximum tax credit a taxpayer can claim from \$3,500,000 to \$7,000,000 per taxable year for low lifecycle emissions renewable fuels.

Taxpayers who previously claimed the tax credit for a single credit period for taxable years before January 1, 2027, may claim another tax credit for taxable years beginning after December 31, 2026.

Amends sec 235-110.32(f), HRS to provide that if the aggregate credit cap of \$20 million is exceeded, , the \$20 million shall be allocated proportionately to the amount of credit claims under this section in the calendar year.

Should total credits be lower than \$20 million, the difference shall be allocated to any remaining eligible claims from taxpayers that have not exceeded the single taxpayer credit cap pursuant to subsection (a).

To the extent that these limitations reduce the taxpayer's credit, the amount of reduction can only be carried forward to the subsequent calendar year and be subject to the limitations of this subsection.

Amends sec 235-110.32(o), HRS, "credit period" to mean a maximum period of ten consecutive years beginning from July 1, 2026.

The measure defines "low lifecycle emissions renewable fuels".

Amends the definition of "renewable feedstocks" to include bio-intermediate ethanol produced from renewable feedstock, biogas or renewable natural gas, gaseous carbon dioxide and renewable or zero carbon energy resources that can be used to generate energy.

Amends the definition of "Renewable fuels" to require the fuel to be sold and consumed as fuel in the State and meets the lifecycle greenhouse gas emission reduction threshold.

EFFECTIVE DATE: July 1, 3000, for taxable years beginning after December 31, 2025.

STAFF COMMENTS: Act 202, SLH 2016, enacted a renewable energy production credit with a five-year life. The credit sunset on December 31, 2021. The credit was revived by Act 16, SLH 2022 with an aggregate cap of \$20 million.

While the idea of providing a tax credit to encourage such activities may have been acceptable a few years ago when the economy was on a roll and advocates could point to credits like those to encourage construction and renovation activities, what lawmakers and administrators have learned in these past few years is that unbridled tax incentives, where there is no accountability or limits on how much in credits can be claimed, are irresponsible as the cost of these credits goes far beyond what was ever intended. Instead, lawmakers should encourage alternative energy production through the appropriation of a specific number of taxpayer dollars. The State could directly purchase energy, or it could give a subsidy to developers. Then, lawmakers would have a better idea of what is being funded and hold the developers of these alternate forms of energy to a deliberate timetable or else lose the funds altogether. A direct appropriation would be preferable to the tax credit as it would: (1) provide some accountability for the taxpayers' funds being utilized to support this effort; and (2) not be a blank check.

Digested: 3/23/2026

**Comments before
March 25, 2026 House Committee on
Economic Development and Technology**

**OPPOSING
Senate Bill 2376**

Relating to “Renewable” Fuels Production Tax Credit

**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.

We’d love to see Senate Bill 2376 deferred indefinitely. However, should you choose to advance this bill, we ask that you at least consider amending it to avoid some of the major harms associated with the burnable fuels involved, most of which are more (or just differently) harmful than the fossil fuels they’d replace.

Here are some high-level suggestions for amendments:

- 1) Remove eligibility of fuels produced from solid wastes such as municipal solid waste (household and commercial trash) or construction and demolition (C&D) wastes unless it can be demonstrated that the feedstocks have no greater concentrations of halogens or toxic metals (like arsenic) than the conventional fossil fuels or biofuels that they would replace.
- 2) Limit the bills to supporting only in-state production of biofuels, and only after demonstrating that land and water resources used are unable to be used for in-state food production.
- 3) Limit the scope to what is required in state law. Note that [HRS §225P-8](#) mandates zero emissions by 2045 of greenhouse gases from “ground transportation and sea and air interisland transportation” – *not* fuel for intercontinental flights (which is also subject to federal preemption and commerce clause litigation).
- 4) Put any subsidies and tax credits toward electrification (like seaglidors for interisland travel) instead of into burnable fuels to avoid a prohibitively expensive double-transition by 2045.

Why are we opposed to this bill?

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 controversy 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.

As our comments on HDOT’s 2025 Draft Energy Security & Waste Reduction Plan summarize, the GREET model used in this legislation is fundamentally flawed, and makes biofuels look like a climate solution by improperly accounting for indirect land use change. Leading climate scientists have described this in this 2024 paper that our comments cite:

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. A full copy of the article is available at <https://www.energyjustice.net/fuels/gtap.pdf>

Find this 32-page paper summarized on pages 10-12 of our [comments to HDOT](#), attached.

It 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 this falls outside of the *Navahine F.* settlement scope and the scope of state laws the settlement aims to enforce. Interisland flights can best be decarbonized by switching to a combination of electric ferries and electric seaglidgers 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.

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 O’ahu. 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).

Hawai'i 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 from 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.

Prioritize 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 680](#) aimed 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.



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.

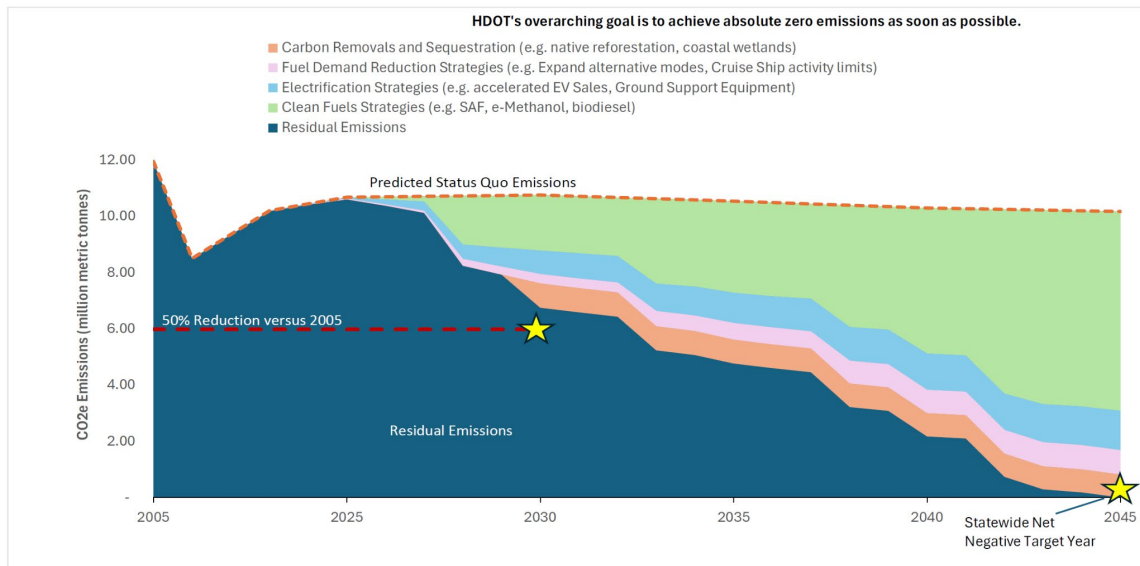
The plan's objective is to meet the goal of zero greenhouse gas (GHG) emissions from the state's "ground transportation and interisland sea and air transportation" systems by 2045, in accordance with state law (HRS § 225P-8)¹ and the *Navahine F. v. Hawai'i Department of Transportation* court settlement.²

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.

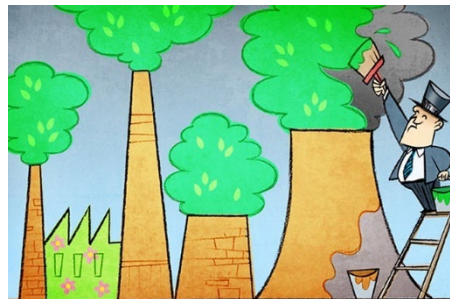
HDOT cannot start off with a plan that expects to miss its mark by 8-10%. Since the "clean" fuels and electricity that make up about another 84% of the plan are not zero GHG emissions sources, the draft plan would miss the mark by far more than 8-10%.

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 Cerology 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/Cerology_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

Counting emissions from electricity generation

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 O’ahu) 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 Kaua’i, and as Hu Honua has been trying to do in Pepeekeo on Hawai’i 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 all 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 Hawai’i**.
- Like fuels, **production of concrete, asphalt and steel** is covered under IPPU or **excluded for materials from outside Hawai’i**.
- **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 CO₂ 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

The ACERT Model

Page 70 of the plan has a sidebar called “Lifecycle 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 (N₂O). 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 CO₂ 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 CO₂ by newly growing trees, is so long that there is no real "carbon neutrality" in a meaningful time frame.

"Biogenic" CO₂ 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 CO₂ molecules that warm the atmosphere just like any CO₂ molecule released from the burning of plastics and other materials made from fossil fuels.

A majority of the CO₂ 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 (CO₂ 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.

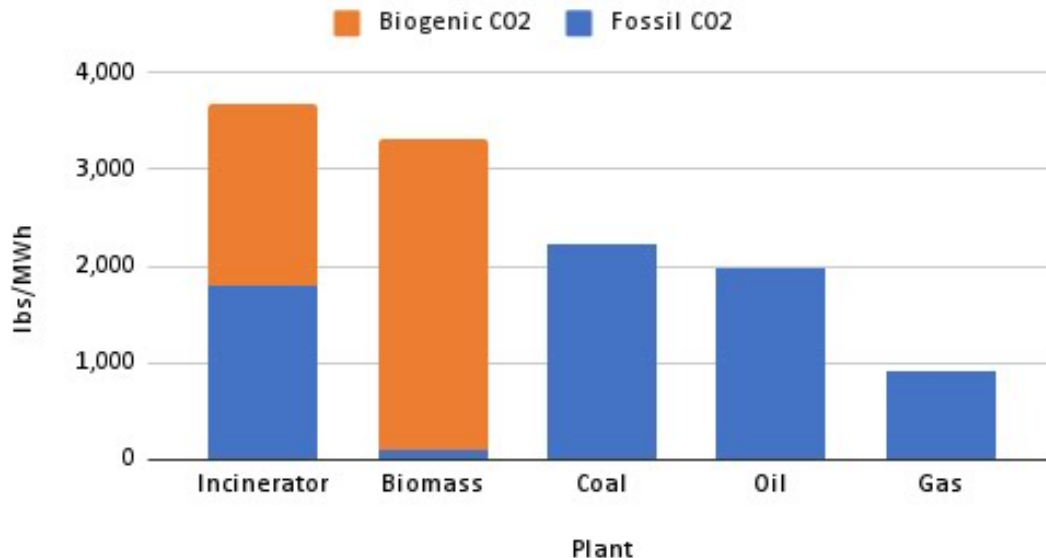
Carbon absorbed by growing plants is already factored into global climate models. The reason why it became a practice not to count carbon emissions in certain sectors was, *when looking at all sectors together*, to avoid double counting when assuming carbon is released when trees are cut down, then counting 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 CO₂ per unit of energy than burning coal. Burning trash for power releases 65% more CO₂ per unit of energy than burning coal. The following data is from EPA's Greenhouse Gas Reporting Program:

Incinerators emit 65% more CO₂ than coal



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 CO₂ 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 CO₂ 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 CO₂-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 capture⁴⁴ 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/Cerology_Alternative-fuels-in-aviation_Part-3-decarbonisation_Oct2023-1.pdf

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/Sullivan2025RFPCComments.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/climate-tech-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 *Klebsiella 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 in an 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 CO₂ 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.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/Cerology_Alternative-fuels-in-aviation_Part-3-decarbonisation_Oct2023-1.pdf

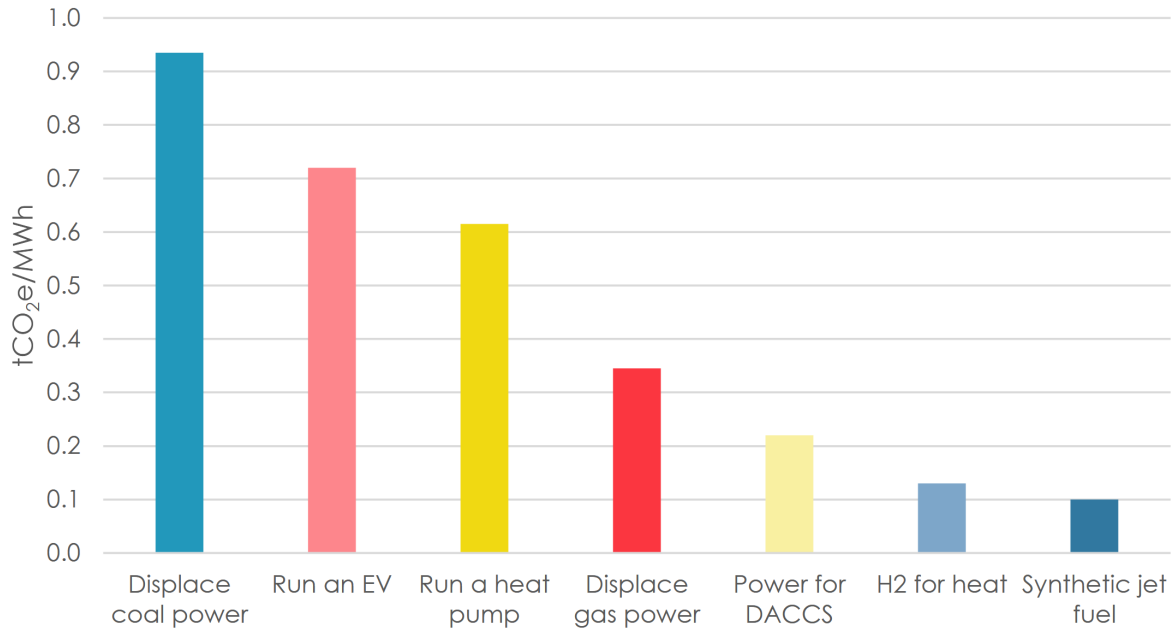


Figure 4 Emission avoidance with 1 MWh of zero carbon electricity in example applications

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 Magazine 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!

Solving local air travel

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

Granted, seaglidors are fairly new, but they now exist and are being tested out. The Regent Seaglider⁵⁹ 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/seaglidors/viceroy>; see also <https://www.youtube.com/watch?v=ggK0vlqiSV4>, <https://www.youtube.com/watch?v=QVMeSbgdOLQ>, 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-passenger electric plane 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

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/Sullivan2025RFPCComments.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 seaglidars 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 and Emissions **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,

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HOUSE OF REPRESENTATIVES
THE THIRTY-THIRD LEGISLATURE
REGULAR SESSION OF 2026

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THE THIRTY-THIRD LEGISLATURE
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COMMITTEE ON ECONOMIC DEVELOPMENT & TECHNOLOGY

Rep. Greggor Ilagan, Chair
Rep. Ikaika Hussey, Vice Chair

Rep. Adrian K. Tam Rep. Kyle T. Yamashita
Rep. Shirley Ann Templo Rep. Joe Gedeon

HEARING

DATE: March 25, 2026
TIME: 10:00 AM
PLACE: VIA VIDEOCONFERENCE
 Conference Room 224

Public commentor: Ted Metrose (independent) - Opposed

SB2376-HD1 – With HD1 the House of Representatives has already significantly amended SB2376 from its initial proposition simply to ensure that the premise upon which the renewable fuel production tax credits of producing feedstocks and converting them into biofuels would be honored. Contrary to the intend of the original which, this bill dramatically expands the value of the tax credit for all renewable fuels by a factor of more than 400% and allows the tax credit to be extended for 10 years.

Alternative/Competing Senate Bill: SB2376 clarifies that the existing \$20 million dollar tax credit exclusively for distributors/sellers of renewable fuels with production facilities in the State. Allows income tax credit of up to \$3.5 million per year for each production facility within the State. Retains existing tax credit of \$0.20/ 76,000 BTU, which is approximately \$0.32/gallon, with no differentiation between transportation fuels and utility fuels.

SB2376-HD1

1. Retains the current Renewable Fuel Production Tax Credits (RFPTC) annual of \$20 million dollars per year for all types of renewable fuels (utility and transportation fuel), including sustainable aviation fuel.

2. Raises value of single producer cap tax credit from \$3.5 million dollars per year to \$7 million per year
3. Raises the unit value of renewable fuel tax credit for all qualified renewable fuels by 425% from \$0.20 to \$0.85 per 76,000 BTU (equivalent LHV of ethanol)
4. Raises the value of the tax credit for biodiesel 425% from approximately \$0.32 to \$1.36/gal
5. Raises the value of the tax credit for SAF from approximately \$0.34 to 1.45/gal
6. Provides for 10-year credit period, starting on July 1, 2026
7. If/when claims exceed the (initial) \$20 million-dollar annual program cap, tax credits are allocated to producer-distributors based on the amount of renewable fuel sold in State, which is likely to exclude smaller produced
8. Unaltered from the current version, the RFPTC proposed by SB2376-HD1 allows for a refundable tax credit (direct State payment) of 70% of the value of tax credit claimed after income tax liabilities have been satisfied.

Position: **Opposed.**

Opposition Summary

SB2376-HD1 is a waste of taxpayer money because it is built on a foundation of misrepresentations and it will not effectively meet any of its purported objectives. Moreover, increasing the size of the tax credit is prohibitively expensive and will not lead to economies of scale, or efficiencies which would allow more biofuel crops to be grown in Hawaii.

Opposition Highlight

1. The \$/gal value of the proposed tax credit for renewable fuel is quite robust but will have little effect/benefit.
2. Because the \$/gal value of the credit has been raised by over 4 times the tax credits will not cover/incentives the production of much fuel and will not be available to many renewable producers, even though the individual producer cap has been doubled from 3.5 million to 7 million dollars per year relative few renewable producers (4-6) will be able to participate in the program and those that do will reap potential windfalls particularly as the program is expanded in future years.

3. Over a 4 year period from 2019 to 2023, Pacific Biodiesel supplied an average of 5.1 million gallons of fuel to HECO. Based on the revised production tax credit of \$0.32/gal Pacific Biodiesel would be able to claim \$6.83 million dollars per year in tax credits - Essentially the maximum allowed for a single producer. This is a huge windfall because Pacific Diesel earned about \$23 million in sales from HECO- not profits. The tax credits for Pacific Biodiesel would all transfer to the bottom line
4. Tax credits are too small and too expensive to have any meaningful impact. Pacific Biodiesel production of 5.1 million gallons represented about 1.1% of the total renewable fuel. After consuming 7 million of the 20 million dollars tax credit that would only leave 14 million to provide tax credits for utility and transportation fuels.
5. Tax credits should not be used to purchase utility fuels because utilities are already obligated by the RPS to either acquire renewable fuels or select carbon free alternatives.
6. Providing a tax credit for renewable fuels used in the utility industry serves as a disincentive for carbon free alternatives which the State and most environmental groups prefer. The State would have to offer equivalent incentives for carbon free alternatives to put them on an equal playing field, any yet there is no reason to incentivize because of the RFS.
7. Tax credits will go to advance the production of renewable feedstocks and renewable fuel production facilities in other states and other countries. The bill preserves the allowance for production facilities to be located out-of-state.
8. Tax credits appear to be refundable. Those provisions were not removed from the bill. Although intended to limit rollover of credits to one year, the RFPTC still retains paragraphs (h and i) which allow tax credits to be refunded. These were amended and removed respectively.
9. The ten year period locks the State into tax credit program, when market forces and alternative measures such as the clean fuel standard or a market based mechanism are expected to be more effective.

The \$/gal value of the proposed tax credit for renewable fuel is quite robust but will have little effect.

According to DBEDT's published energy data, Hawaii utilities have paid an average of \$2.85/gallon for utility fuel over a recent 4-year period (2021-2024). Consequently, the State would be effectively subsidizing more than 46% of the cost of conventional utility diesel fuel, constrained only by the initial \$20 million dollar cap renewable utility fuel which is sure to be fully expended (claimed Pacific BioDiesel, Par Hawaii Refining and others). At \$1.36/gal the production of just 14.7 million gallons of qualifying renewable diesel fuel would entirely consume the \$ 20 million dollar tax credit. While a tax credit of roughly 46% (on per gallon basis) is more than generous (particularly when applied on top of federal incentives), the proposed \$20 million dollars in annual public subsidies will have little impact because HECO alone reported that between (2019-2023) it used an average 454 million gallons of fossil fuels per year.

HECO Fuel Use			
5-Yr Ave (2019 -2023)			
Fuel Type	BBS	MM Gals	Pct
Low Sulfur Fuel Oil	7,544,529	316.9	69.0%
High Sulfur Fuel Oil	731,101	30.7	6.7%
Diesel	2,150,637	90.3	19.7%
Biodiesel	120,816	5.1	1.1%
Naphtha	384,258	16.1	3.5%
All Fuel Use	10,931,341	459.1	100%

Optimistically assuming (for illustration purposes) that the entire 20-million-dollar tax credit for renewable fuel producers was entirely passed on to the utilities and used to purchase 14.7 million gallons of renewable biofuels, it would only reduce HECO's fuel costs by 3.2% (14.7/454). Theoretically utility rate payers would benefit from the savings passed on to HECO for renewable fuel purchased from in-state producers, but it will be at the taxpayer's expense. (Is that really a better or more equitable means of paying for renewable utility fuel?)

Obviously, the complete pass through of the savings afforded by tax credits from producers to renewable fuel customers (like HECO and KIUC) is a big and unrealistic assumption. In fact, utility rate-payers are likely to realize only a very small portion of the savings paid for by taxpayers, if any, because (other than good will) there is no financial incentive or requirement for renewable fuel producers to pass through any

portion of tax credit savings on to its customers, particularly those like HECO which are obligated to buy renewable fuels.

Similarly, again hypothetically even if the first \$20 million in renewable fuel tax credits was limited (by regulation) to fuels produced for on-island transportation (cars and trucks), only about 3.2% of the approximate 455 MM gals/yr of road diesel and gasoline consumed during the same period (2019-2023) would be covered (paid for by public funds). With the need for renewable fuels being so great, even generous tax credits (\$1.36 -1.45/gal) with a ten-year life, do not go very far. Consequently, (and as previously conveyed by Par Hawaii Refining) the program cap will soon have to be increased to at least 80 million dollars per year and routinely increased, to keep renewable fuels from gravitating to more lucrative markets on the West Coast.

The bill proposes to expand the renewable fuel production tax credit for renewable fuels principally for Par Hawaii Refining and its new Japanese partners (Mitsubishi and ENEOS). In addition to substantially raising the \$/gal value of the tax credit, SB2376HD-1 increases the program cap and clears the runway (and appears to be designed) for future expansion. During the 2024 legislative session Par Hawaii submitted testimony which conveyed that unless financial incentives (tax credits of \$1-\$2/gal) are provided, approximately 60 million gallons renewable fuels "*will be produced and delivered to other markets including the West Coast.*"

The ultimatum is real and the risk is on-going because Par Hawaii Refining and its partners can readily produce renewable fuels in the Hawaii FTZ and then ship the renewable fuel out-of-state, to the West Coast without incurring any GE tax liability or significant incremental cost burdens. The proposed measure (SB2376) is responsive to that risk and generally accommodates Par Hawaii's (opening) demand for additional financial incentives (in the form of stackable and refundable tax credits) to ensure that Par Hawaii Refining (and other producers) will not only manufacture renewable fuels in Hawaii but also sell the renewable fuel in Hawaii.

Unfortunately, robust State tax credits for renewable fuels produced by Par Hawaii Refining and its new joint venture partners Mitsubishi and ENEOS will do relatively little to advance Hawaii's renewable energy goals principally because so much renewable fuel is needed. Particularly given the State's other priorities, an initial grant of \$20 million dollars per year in refundable State tax credit so that Par Hawaii Refining and other Hawaii producers can compete with the West Coast is far too expensive. Moreover the \$/gallon value of the refundable tax credits that have been proposed make the tax credit approach cost prohibitive (impossible) to scale up as part of a larger and longer-term solution. SB2376 gives Par Hawaii Refining a foot-in-

door pathway to reaching its goal of extending the renewable fuel production credit to at least \$80,000,000 dollars per year and even that level of financial support is unlikely to be enough to prevent outflows.

Tax Credits for the Production and in-state sale of SAF

Largely because there is no regulatory mandate for SAF and because airlines are unwilling to pay more for renewable jet fuel, to further incentivize the production and use of SAF in Hawaii, SB2376-HD1 proposed to grant a tax credit for SAF of about 1.45 gallon.

While the higher per gallon tax credit improves the profitability margins of the renewable fuel producer, it means less renewable fuel will/can be subsidized and therefore kept in and sold in Hawaii.

Again, assuming, for the purposes of illustrating, the special allowance for jet fuel would make \$20 million dollars in public subsidies available under the program cap, and it would mean that at full utilization at most 13.8 million gallons of SAF could be produced with the benefit of the proposed tax credit. Par Hawaii Refining has indicated (and provided testimony) that its new \$90 million-dollar renewable production facility in the Campbell Industrial Park will be able to produce 36 million gallons of SAF in the first full year of operation. That means 22.2 million gallons of the SAF will be shipped out of state to the West Coast in search of higher valuations than will be sold in Hawaii.

Of course, next year or perhaps even later in this legislative session the program cap (which incidentally is allocated based on the number of credits claimed) can be expanded from \$20,000,000 to say \$50,000,000 next year and \$80,000,000 the year after that, as had been proposed in prior legislative sessions.

Again, because the demand for renewable jet fuel is so high, the tax credit (which will be initially limited to \$20 million dollars per year), will not really encourage or allow much SAF to come to market in Hawaii, based on the overall size of the jet fuel market. Other bills and studies have cited the State's jet fuel consumption baseline of 700+ million gallons per and on that basis, there is tremendous need for SAF. In 2025 Alaska and Hawaiian Airlines submitted joint testimony on HB976 which stated: "*Hawaii's aviation industry consumes over 600 million gallons of jet fuel annually,..*"

If the proposed \$20,000,000 dollar tax credit was entirely dedicated to the producers of alternative jet fuel (Par Hawaii and partners) it would only cover or displace 2.3% (13.8/600) of the conventional domestic jet fuel, sold (and taxed) by Hawaii.

Obviously if the \$20 million dollar tax credit was spread out over energy, on-land transportation and for travel by air and sea, the proposed public subsidy would cover (pay for) for less than 1% of renewable fuels required by the State. Note: The presumptive demand for renewable fuels (and projected shortfall in supply) could be substantially reduced, if the State's ambitions for transportation fuels were more strictly in alignment with and limited to those specified by HRS 225P-8. Particularly since there is no guarantee of cost savings or economic benefits returned to taxpayers (other than renewable fuel producers), how much more in refundable tax credits (subsidies) can the State realistically afford to bring renewable fuels to Hawaii? As inferred/explained above, even if the current tax credit cap of \$ 20 million was raised by a factor of 20X to \$400 million dollars per year, the State would remain terribly short on renewable fuels and would remain at risk of losing them to higher bidders on the west coast.



August 29, 2025

VIA EMAIL:

Laura Kaakua
Hawai'i Department of Transportation
HDOTClimateCulture@Hawaii.gov

RE: Energy Security & Waste Reduction Plan Public Comment

Dear Ms. Kaakua:

On behalf of the thirteen youth plaintiffs in the *Navahine F. et al. v. Hawai'i Dep't of Transp. et al.*, 1CCV-22-0000631 litigation, Our Children's Trust and Earthjustice submit the following comments on the Draft Energy Security and Waste Reduction Plan (2025) (the "Plan"). We appreciate the Hawai'i Department of Transportation's ("HDOT's") significant leadership and work on the Plan over the last several months to comply with the settlement agreement in *Navahine F.* ("*Navahine Settlement*") to protect the constitutional rights of youth and future generations in Hawai'i. The *Navahine Settlement* requires zero emissions no later than 2045 in ground, marine and **inter-island** aviation and recognizes that decarbonizing transportation is not a choice, but a scientific necessity to protect the constitutional rights of children and future generations in Hawai'i. *Navahine Settlement* ¶¶ 1, 5(c).