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## Testimony of **MARK B. GLICK, Chief Energy Officer**

### before the **SENATE COMMITTEE ON ENERGY AND INTERGOVERNMENTAL AFFAIRS**

Tuesday, February 17, 2026  
3:05 PM  
State Capitol, Conference Room 224 and Videoconference

Providing Comments on  
**SB 2369**

### **RELATING TO COMBUSTION-FREE ENERGY SOLUTIONS.**

Chair Wakai, Vice Chair Chang, and Members of the Committee, the Hawai'i State Energy Office (HSEO) offers comments on SB 2369, which requires the Hawai'i State Energy Office to commission a study of different energy consumption sectors, including electricity, transportation, and heating, to determine which sector can be most quickly and cost-effectively decarbonized through additional public investment in combustion free renewable energy sources. SB 2369 requires a report of its findings and recommendations for delivery to the Legislature no later than December 31, 2026.

HSEO shares the measure's underlying intent to advance Hawai'i's climate and energy objectives. However, HSEO is concerned that the planning effort contemplated by SB 2369 is highly redundant with significant statewide energy and climate planning work that has already been completed in recent years. In particular, the 2023 HSEO Pathways to Decarbonization<sup>1</sup> and the more recent 2025 Hawai'i Climate Action Pathways<sup>2</sup> report provide comprehensive statewide analyses and recommendations to

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<sup>1</sup> Hawai'i State Energy Office (2023). Hawai'i Pathways to Decarbonization, Report to the 2024 Hawai'i State Legislature. Available at: <https://energy.hawaii.gov/clean-energy-vision/decarbonization-strategy/>

<sup>2</sup> Hawai'i Climate Change, Mitigation, and Adaptation Commission (2025) Hawai'i Climate Action Pathways. Available at: <https://climate.hawaii.gov/wp-content/uploads/2025/12/Hawai%E2%80%98i-Climate-Action-Pathway.pdf>

guide policy, investment, and implementation. Both reports identify and quantify specific strategies, policy implementation, and pathways needed to reduce greenhouse gas emissions and transition the State toward a clean energy economy.

Further, many of the technically viable options available today still require combustion, as fully commercialized, scalable, and economically competitive non-combustion alternatives do not yet exist for certain hard-to-abate sectors. This is particularly true in maritime shipping and long-haul and interisland aviation.<sup>3</sup> It is also true in the electric sector, where firm, dispatchable grid capacity is necessary to maintain reliability and during extended intermittent renewable shortfalls. While electrification and direct-use renewable technologies can and should be aggressively pursued where feasible, there remain applications for which liquid or gaseous fuels—potentially lower-carbon or renewable in origin—are the only currently deployable and reliable solutions at scale. Framing the State's pathway as strictly "combustion-free" risks overlooking practical and technical constraints and may unintentionally narrow the range of viable transition strategies.

Finally, it is important to be candid about Hawai'i's energy realities. While the State is committed to long-term full decarbonization and reducing reliance on imports, it is important to acknowledge that at this time, thermal generation and imports will continue to play a critical role in the energy sector and should be the focus of immediate attention and mitigation measures.

From HSEO's perspective, the need for action has not changed since the publication of past plans and strategies. At this time, HSEO believes state resources would most appropriately and effectively be allocated to issue-specific work and implementation in priority areas intended to advance Hawai'i's climate and energy objectives already identified in existing plans and reports.

Thank you for the opportunity to testify.

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<sup>3</sup> While electric aviation technologies are under development, they remain constrained by passenger capacity, weight, and range limitations inherent in current battery technologies. Meaningful deployment for interisland service would likely necessitate substantial shifts in fleet composition, substantial increases in flight frequency, charging infrastructure, and airport operations to maintain comparable levels of service.

**Comments before  
February 17, 2026  
Senate Committee on Energy and  
Intergovernmental Affairs**

**SUPPORTING  
Senate Bill 2369**  
Relating to Clean Energy Study

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

**Please support Senate Bill 2369.**

This bill would require that Hawai'i State Energy Office commission a study that has not been done before – a study of the most cost-effective ways to quickly decarbonize our energy system, looking at all sectors of consumption.

Studies and reports on the topic have all included greenhouse gas (GHG)-emitting combustion sources while some have also included new fossil fuel imports in the form of liquefied natural gas (LNG), or unconstitutional nuclear power. These reports include:

- Hawaii Department of Transportation's 2025 "Energy Security & Waste Reduction Plan" (the Greenhouse Gas Reduction Plan required by the *Navahine F. v. HDOT* settlement)
- Hawaii State Energy Office's 2025 "Alternative Fuel, Repowering, and Energy Transition Study,"
- Hawaii State Energy Office's 2023 "Hawai'i Pathways to Decarbonization" report to the 2024 state legislature, and
- GTK's 2025 "Assessment of the Scope of Tasks to Completely Phase Out Fossil Fuels in Hawai'i."

The *Navahine F. v. Hawaii Department of Transportation* settlement requires that the State establish a Greenhouse Gas Reduction Plan that can 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.

The latest plan, by HDOT, is unnecessarily and monstrously expensive, requiring a major transition to burnable biofuels, then a second transition (by 2045, so in under 19 years) to electrofuels because biofuels are not carbon-free. Getting a second opinion by studying how to electrify and meet the state's needs without combustion is wise from an economic vantage point alone, not to mention the environmental benefits.

There are three broad sectors of energy consumption, as organized by the U.S. Energy Information Administration. These break down further into subcategories as follows:

#### Electricity

- Residential
- Commercial/Institutional
- Industrial

#### Heating

- Residential (cooking, water heating, and space heating)
- Commercial/Institutional
- Industrial

#### Transportation

- Air (inter-island and intercontinental)
- Land (private vehicles and mass transit)
- Sea

It is becoming well-accepted that the best way to decarbonize all the sectors is to electrify the heating and transportation sectors and then have the electricity sector addressed through the following hierarchy: conservation, efficiency, solar, wind, and energy storage.

Some of these sectors are easier to electrify than others, with intercontinental air travel and select industrial heating applications being the only sectors where the technology does not yet exist to simply electrify them so that they can run on clean, non-combustion sources.

The question is whether it makes sense to invest state taxpayer funds in subsidizing burnable fuels in sectors that are hardest to solve without first investing in cleaning up the sectors where the technology exists and is increasingly cost-effective.

A good study of this will help inform the legislature so that future policies might focus where taxpayer dollars can be best spent speeding up the clean energy transition, instead of risking them on experimental and polluting combustion sources.

It will also show that intermittent renewables like wind and solar can be as “firm” as needed with appropriate levels of storage capacity, and that combustion technologies are not needed to make energy “firm.”

Attached is a resolution adopted by the Democratic Party of Hawaii in 2024 in support of this study, followed by our critique of the HDOT plan.

Mahalo for your support for this important resolution.

## 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.

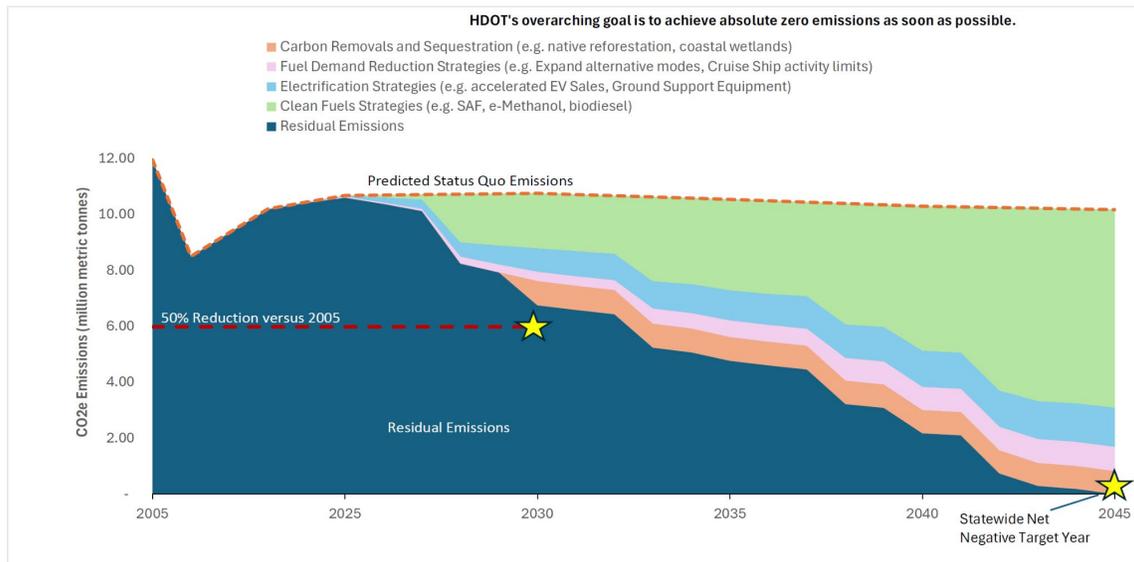
The plan's objective is to meet the goal of zero greenhouse gas (GHG) emissions from the state's "ground transportation and interisland sea and air transportation" systems by 2045, in accordance with state law (HRS § 225P-8)<sup>1</sup> and the *Navahine F. v. Hawai'i Department of Transportation* court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

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.<sup>3</sup> 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%.<sup>4</sup>**

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



<sup>1</sup> <https://law.justia.com/codes/hawaii/title-13/chapter-225p/section-225p-8/>

<sup>2</sup> <https://statecourtreport.org/sites/default/files/2024-07/first-circuit-court-of-hawai-i-joint-stipulation-and-order.pdf>

<sup>3</sup> 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>

<sup>4</sup> 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.<sup>5</sup> 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.

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<sup>5</sup> 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.”<sup>6</sup>

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

<sup>6</sup> 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](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.<sup>7</sup>
- Refrigerants historically have very high global warming potentials (GWP). R134a was the norm in systems and has a high GWP of 1,526 over 100 years (meaning that it is 1,526 times as potent as CO<sub>2</sub> 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.<sup>8</sup> 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.

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<sup>7</sup> <https://pubmed.ncbi.nlm.nih.gov/11878368/>

<sup>8</sup> <https://naturalrefrigerants.com/experts-sound-the-alarm-about-rising-tfa-levels/>

- New York and California have programs relating to refrigerant recovery and recycling.<sup>9,10</sup> 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 CO<sub>2</sub>e in this report. Only CO<sub>2</sub>e values are presented, as they account for all three GHGs in a standardized measure, with CO<sub>2</sub> 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.

<sup>9</sup> <https://dec.ny.gov/sites/default/files/2023-12/part494expressterms2023public.pdf>

<sup>10</sup> <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.<sup>11</sup>

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.”<sup>12</sup>

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.”<sup>13</sup>

“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.”<sup>14</sup>

“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.”<sup>15</sup>

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.<sup>16</sup>

The models incorrectly assume that converting pasture to cropland will not lead to deforestation to replace the pasture.<sup>17</sup>

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

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<sup>11</sup> <https://www.epa.gov/system/files/documents/2022-03/biofuel-ghg-model-workshop-gtap-bio-model-2022-03-01.pdf>

<sup>12</sup> 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>

<sup>13</sup> *Id.* at 1.

<sup>14</sup> *Id.* at 2.

<sup>15</sup> *Id.* at 3.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.* at 7.

seriously as a policy tool.”<sup>18</sup> They later point out that GTAP “appear[s] to be picking parameters to fit a narrative.”<sup>19</sup>

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.”<sup>20</sup>

“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.”<sup>21</sup>

### 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.”<sup>22</sup> 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?

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<sup>18</sup> *Id.* at 11.

<sup>19</sup> *Id.* at 13.

<sup>20</sup> *Id.* at 17.

<sup>21</sup> *Id.* at 21.

<sup>22</sup> <https://store.aci.aero/form/acert/>

In addition, ACERT uses outdated GWPs from 2014 (AR5)<sup>23</sup> when 2021 (AR6)<sup>24</sup> is available, and uses the 100-year instead of 20-year GWPs, which is inappropriate considering the policy time frame (2045) being 20 years away and the fact that global warming tipping points (already showing up) aren't about to wait for 100 years. They also choose the more optimistic figures with no climate-carbon feedback which allows them to pluck out the 28 number for methane instead of 34, and 265 instead of 298 for nitrous oxide (N<sub>2</sub>O). 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."<sup>25</sup>

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.<sup>26</sup>

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<sup>23</sup> [https://www.climatechange2013.org/images/report/WG1AR5\\_Chapter08\\_FINAL.pdf#page=56](https://www.climatechange2013.org/images/report/WG1AR5_Chapter08_FINAL.pdf#page=56)

<sup>24</sup> [https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC\\_AR6\\_WGI\\_FullReport.pdf#page=1034](https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_FullReport.pdf#page=1034)

<sup>25</sup> <https://www.epa.gov/risk/biofuels-and-environment>

<sup>26</sup> <https://assessments.epa.gov/biofuels/document/&deid=363940>

## Counting all the carbon

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

Nearly all of the proposed fuels will still release CO<sub>2</sub> when burned. Assumptions about biogenic carbon neutrality has been repeatedly debunked by climate scientists for over 15 years. It would be good for HDOT to get familiar with these critiques, especially with regard to fuels that involve trees, municipal waste, and construction and demolition waste, where the large time lag between harvesting trees for wood and paper, and the recapture of that CO<sub>2</sub> by newly growing trees, is so long that there is no real "carbon neutrality" in a meaningful time frame.

"Biogenic" CO<sub>2</sub> comes from the burning of paper, food scraps, yard waste, wood, leather, and other materials that ultimately grew from soil. Biogenic carbon dioxide emissions are real CO<sub>2</sub> molecules that warm the atmosphere just like any CO<sub>2</sub> molecule released from the burning of plastics and other materials made from fossil fuels.

A majority of the CO<sub>2</sub> emissions from trash incinerators like H-POWER get erased in most GHG reporting due to outdated assumptions that "biogenic" carbon should not be counted. It is important to recognize that even if HDOT will not look at the science challenging biogenic carbon neutrality assumptions, the fossil fraction of trash-derived fuel must be recognized as fossil, even though the state Renewable Portfolio Standard law brands it "renewable."

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

However, carbon (CO<sub>2</sub> 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.<sup>27</sup>

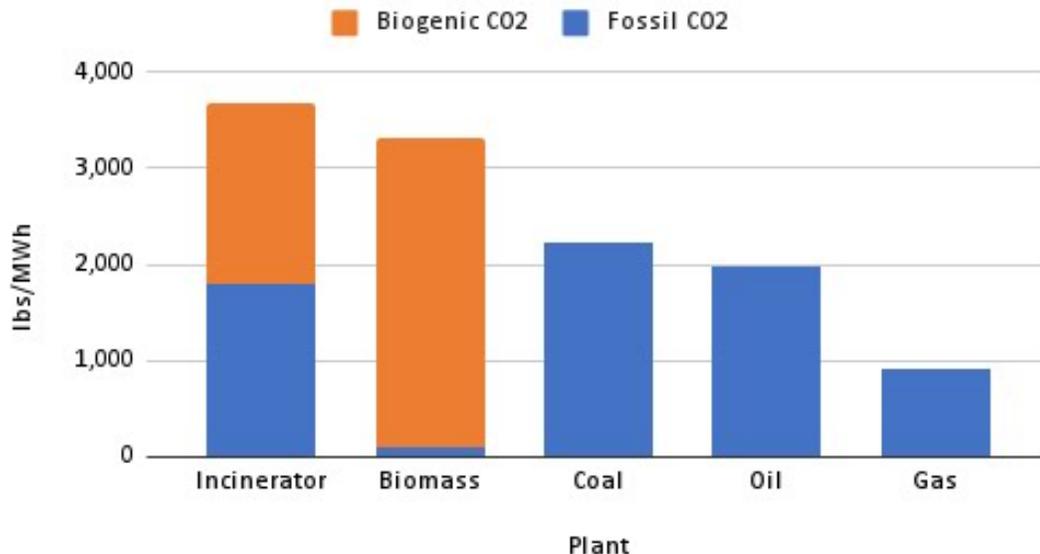
Should HDOT subtract GHG emissions because of plants and trees that already grew? [This would be the double counting error.] ...or to subtract emissions from plants and trees that they presume will grow later? [This would be speculative, and there is not always a guarantee of trees or crops being replanted,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

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

Burning trees for electrical power releases 50% more CO<sub>2</sub> per unit of energy than burning coal. Burning trash for power releases 65% more CO<sub>2</sub> per unit of energy than burning coal. The following data is from EPA's Greenhouse Gas Reporting Program:

### Incinerators emit 65% more CO<sub>2</sub> 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.<sup>28</sup> This is not carbon neutrality, but just absorbing that extra CO<sub>2</sub> so that it's as bad as coal burning after several decades. Carbon neutrality would take centuries and is never quite reached, even if trees were replanted and not cut down in that time frame (or burned up in wildfires on a warming planet).

In trying to avoid critical global warming tipping points, we do not have several decades to wait for trees to suck up extra carbon released by burning trash or trees. This carbon must be counted, not discounted as if there's a free pass to release that CO<sub>2</sub> because a slow carbon cycle will eventually suck it back up.

Ironically, it is better for the climate to burn coal and plant trees than to burn trees and plant trees. We are not recommending either. However, this CO<sub>2</sub>-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.

<sup>28</sup> 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](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.<sup>29,30,31,32</sup> 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,<sup>33</sup> sewage sludge,<sup>34</sup> construction and demolition waste,<sup>35</sup> animal wastes,<sup>36</sup> trees,<sup>37</sup> purpose-grown crops,<sup>38</sup> crop wastes,<sup>39</sup> vegetable oils,<sup>40</sup> anaerobic digester gas,<sup>41</sup> landfill gas,<sup>42</sup> algae,<sup>43</sup> and even “thin air” and water with electrofuels that involve direct air capture<sup>44</sup> and “green” hydrogen.<sup>45</sup>

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](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](https://www.aef.org.uk/uploads/2023/11/Cerology_Alternative-fuels-in-aviation_Part-3-decarbonisation_Oct2023-1.pdf)

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<sup>29</sup> Biomass Incineration and Climate. <https://energyjustice.net/biomass/climate>

<sup>30</sup> Energy Justice Network comments on EPA WARM Model. [https://downloads.regulations.gov/EPA-HQ-OLEM-2023-0451-0112/attachment\\_1.pdf](https://downloads.regulations.gov/EPA-HQ-OLEM-2023-0451-0112/attachment_1.pdf)

<sup>31</sup> Partnership for Policy Integrity comments on EPA WARM Model. [https://downloads.regulations.gov/EPA-HQ-OLEM-2023-0451-0112/attachment\\_7.pdf](https://downloads.regulations.gov/EPA-HQ-OLEM-2023-0451-0112/attachment_7.pdf)

<sup>32</sup> 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>

<sup>33</sup> <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>

<sup>34</sup> <https://sewagesludgeactionnetwork.com>; <http://www.ejnet.org/sludge>

<sup>35</sup> <https://energyjustice.net/waste/cd/>; <https://energyjustice.net/incineration/cd.pdf>

<sup>36</sup> <https://energyjustice.net/poultrylitter/>

<sup>37</sup> <https://energyjustice.net/biomass/>; <https://energyjustice.net/biomass/woodybiomass.pdf>; <https://energyjustice.net/hi/huhonua.pdf>

<sup>38</sup> <https://energyjustice.net/ethanol/ethanol-factsheet.pdf>; <https://energyjustice.net/biodiesel/biodiesel-factsheet.pdf>

<sup>39</sup> [https://energyjustice.net/ethanol/cellulosic/factsheet\\_cellulosic.pdf](https://energyjustice.net/ethanol/cellulosic/factsheet_cellulosic.pdf) (covers cellulosic ethanol generally)

<sup>40</sup> <https://www.biofuelwatch.org.uk/2025/fat-grab-report/>

<sup>41</sup> <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://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://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/>

<sup>42</sup> <http://www.energyjustice.net/lfg>

<sup>43</sup> <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>

<sup>44</sup> [https://www.foodandwaterwatch.org/wp-content/uploads/2023/01/FSW\\_2212\\_DirectAirCapture.pdf](https://www.foodandwaterwatch.org/wp-content/uploads/2023/01/FSW_2212_DirectAirCapture.pdf)

<sup>45</sup> <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."<sup>46</sup> 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

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<sup>46</sup> [https://www.capitol.hawaii.gov/session/measure\\_indiv.aspx?billtype=SB&billnumber=995&year=2025](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.<sup>47</sup> 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.<sup>48</sup>

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.<sup>49</sup> 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.<sup>50</sup> As we discuss in our testimonies on "clean fuels" bills,<sup>51</sup> the toxic hazards associated with pyrolysis or gasification of C&D waste are serious, especially where wood treated with copper, chromium and

<sup>47</sup> <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>

<sup>48</sup> 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>

<sup>49</sup> <https://www.sciencedirect.com/science/article/abs/pii/S0929139398001292> (bypass paywall [here](https://www.gmwatch.org/en/latest-listing/1-news-items/8951-full-story-of-the-dr-elaine-ingham-controversy-over-klebsiella-p)); 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>

<sup>50</sup> The project is described here: [https://files.hawaii.gov/dbedt/erp/Doc\\_Library/2025-06-23-MA-DEA-Maui-Aloha-Aina-Project.pdf](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>

<sup>51</sup> [https://www.capitol.hawaii.gov/sessions/session2025/Testimony/HCR70\\_HD1\\_TESTIMONY\\_TRN\\_04-01-25\\_.PDF#page=9](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.<sup>52</sup>

### 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).<sup>53</sup>

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

### Electrofuels

Direct air capture is another inefficient and wasteful scheme some aim to combine with other energy-wasting ideas (green hydrogen) to make "sustainable aviation fuel" which is specifically promoted in the settlement. Like green hydrogen, it makes no sense to use before the electric grid is 100% powered by non-combustion renewable energy sources and has extra wind and solar to spare. Doing so would release about as much or more CO<sub>2</sub> than it would capture, either directly by using oil-fired power, or indirectly by using up renewables that could be displacing oil-fired power.

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<sup>52</sup> 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](https://www.capitol.hawaii.gov/sessions/session2025/Testimony/HB976_TESTIMONY_EEP_01-28-25_PDF#page=42)

<sup>53</sup> <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.

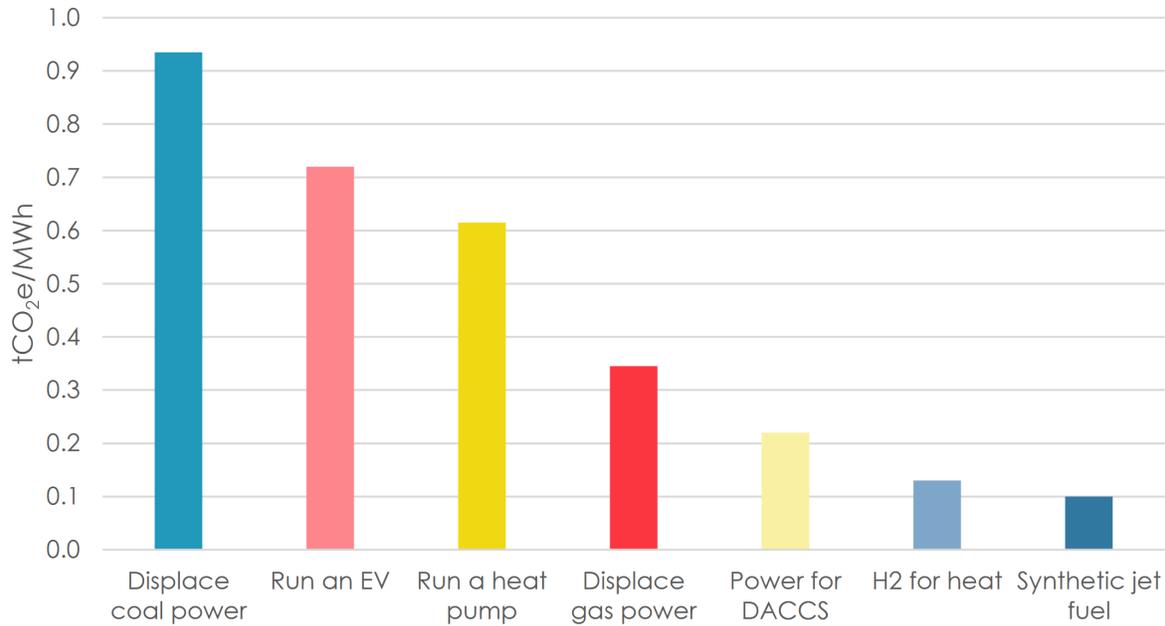
HECO is 64.2% oil generation and 3.3% waste/biofuels as of 2024. Clean (non-combustion) renewable electricity must displace this 67.5% combustion power before wasting energy on "green hydrogen" or electrofuels for planes. Otherwise, you're keeping the grid dirtier and contributing to more GHGs.

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.<sup>54</sup>

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<sup>54</sup> See page 24 in [https://www.aef.org.uk/uploads/2023/11/Cerology\\_Alternative-fuels-in-aviation\\_Part-3-decarbonisation\\_Oct2023-1.pdf](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.<sup>55</sup> 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.”<sup>56</sup>

### 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

<sup>55</sup> <https://www.eesi.org/papers/view/fact-sheet-the-future-of-the-trucking-industry-electric-semi-trucks-2023>

<sup>56</sup> <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.<sup>57</sup>

## 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.<sup>58</sup>

Granted, seaglidors are fairly new, but they now exist and are being tested out. The Regent Seaglider<sup>59</sup> 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

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<sup>57</sup> See discussion of double-counting here: <https://www.aef.org.uk/2025/08/05/double-counting-risks-in-saf-global-supply-chain/>

<sup>58</sup> <https://www.hawaiiseaglider.org/april-press-release>

<sup>59</sup> <https://www.regentcraft.com/seaglidors/viceroy>; see also <https://www.youtube.com/watch?v=ggK0vlqiSV4>, <https://www.youtube.com/watch?v=QVMesbgdOL0>, and [https://www.youtube.com/watch?v=s-GP\\_0Cud98](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.<sup>60</sup>

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.<sup>61</sup>

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."<sup>62</sup> 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.<sup>63</sup>

<sup>60</sup> <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/>

<sup>61</sup> <https://pmc.ncbi.nlm.nih.gov/articles/PMC12347778/>

<sup>62</sup> 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](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>

<sup>63</sup> <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 seaglidors 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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# Environmental Caucus of The Democratic Party of Hawai'i

## SUPPORT TESTIMONY SB 2369 – RELATING TO COMBUSTION-FREE ENERGY SOLUTIONS

Hearing: EIG • Tuesday, February 17, 2026 • 3:05 PM

Place: Conference Room 224 & Videoconference

Aloha Chair Wakai, Vice Chair Chang, and Members of the Committee,

The Environmental Caucus of the Democratic Party of Hawai'i **strongly SUPPORTS SB 2369.**

This bill takes a responsible, science-based approach to Hawai'i's decarbonization future by directing the Hawai'i State Energy Office to commission a study of combustion-free, cost-effective pathways across multiple energy sectors. This is exactly the type of forward-looking, evidence-driven planning the State needs to meet its climate commitments while protecting public health, natural resources, and ratepayers.

1. Hawai'i must transition away from combustion to meet its climate goals. Burning fuels—whether fossil-based or labeled “renewable”—produces greenhouse gases, air pollution, and harmful byproducts. A combustion-free framework ensures that decarbonization strategies do not simply replace one polluting fuel with another.
2. A comprehensive, sector-wide analysis is essential for effective planning. Hawai'i's energy landscape spans electricity generation, transportation, buildings, and industrial uses. A coordinated study will help identify the most cost-effective, scalable, and technologically feasible solutions across these sectors, rather than relying on piecemeal or industry-driven proposals.
3. The study will help the Legislature avoid costly false solutions. Without rigorous analysis, Hawai'i risks investing in technologies that prolong combustion, increase long-term costs, or create new environmental burdens. SB 2369 ensures that future policy decisions are grounded in independent, data-driven evaluation rather than marketing claims.
4. A combustion-free approach aligns with public health and environmental justice. Communities across Hawai'i—especially frontline and Native Hawaiian communities—bear disproportionate burdens from air pollution and industrial

emissions. Prioritizing combustion-free solutions protects these communities while advancing the State's equity goals.

5. The bill strengthens Hawai'i's leadership in clean energy innovation. By commissioning a study focused on truly clean, non-combustion pathways, Hawai'i positions itself at the forefront of climate-aligned energy planning and sets a model for other states.

For these reasons, the Environmental Caucus urges the Committee to **pass SB 2369** and support a clear, science-based roadmap toward a combustion-free, climate-safe future for Hawai'i.

Mahalo for the opportunity to testify.

Alan Burdick, Co-chair

Mike Ewall, Co-chair

Melodie Aduja, Co-chair Emerita

**Environmental Caucus Democratic Party of Hawai'i**

**SB-2369**

Submitted on: 2/16/2026 12:40:18 PM

Testimony for EIG on 2/17/2026 3:05:00 PM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Georgia L Hoopes	Individual	Support	Written Testimony Only

Comments:

Aloha Committee Members!

SB2369 would make the state commission the first-ever report on how Hawai‘i can transition to clean, renewable energy without burning things. All of the existing plans involve dressing up biofuels and waste-based fuels as green, even though they're just different harmful compared to fossil fuels and can actually be worse in many ways. Some existing plans also promote nuclear power or liquified natural gas (a fossil fuel). We need a genuine path forward that doesn't rely on dressing up dirty fuels as green and sustainable.

Mahalo!

Georgia Hoopes, Kalaheo

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February 10, 2026

**RE: COMMENTS ON SB3081 RELATING TO COMBUSTION-FREE ENERGY SOLUTIONS**

Dear COMMITTEE ON ENERGY AND INTERGOVERNMENTAL AFFAIRS:

I support this bill in general but I am concerned that the State of Hawaii Energy Office is biased towards geothermal and that somehow the Hawaii Legislature will think that geothermal is a combustion-free energy solution.

Drilling into the earth to create wells and build power plants, roads and electrical infrastructure is going to be major users of oil/gas and electricity to produce all that heavy equipment needed in Hawaii. This is how it has been so far: You have to ship all the drill rigs and miles of super-high-strength pipes, power plant components, 60,000 gallons of petrochemical Pentane to run binary plants with regular replacement shipments because it gets into the air and also it goes into the ground through faulty pipes., PGV uses probably 60,000 gallons of liquid Nitrogen which is constantly being lost into the ground through faulty pipes ground apart by the Lower East Rift Zone. Currently all of this is shipped over two oceans from Israel to Puna, year in and year out since the late 1980s. Not a small carbon footprint, it is a continual carbon footprint.

Additionally, so far HELCO has had to keep an entire power plant ready to spring into action at any minute, as PGV has been knocked offline many times over the decades. Sometimes it is for a day or two, when HELCO has power pole or transmission line issues or lightening strikes the plant (2011), then we have weeks to months offline after Hurricane Iselle, then we have 2 ½ years offline after lava erupted from PGV's property line in 2018. Nature abhors a vacuum and that is what 30 years of microfracking on an active volcano does, disturbs the integrity of the rock formations and lava erupts at the weakest spot....

So, go ahead and pass the bill. Just don't bother to include geothermal in your combustion-free list of alternatives.

Sincerely,

*Sara Steiner*



**LATE**

**SB-2369**

Submitted on: 2/16/2026 3:53:42 PM

Testimony for EIG on 2/17/2026 3:05:00 PM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Ken Stover	Individual	Support	Written Testimony Only

Comments:

support

**LATE**

**SB-2369**

Submitted on: 2/16/2026 4:10:43 PM

Testimony for EIG on 2/17/2026 3:05:00 PM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Mary True	Individual	Support	Written Testimony Only

Comments:

I support SB2369. We need to be talking about clean, renewable energy. Anything which burns: natural gas, bio-mass etc. causes pollution. We have geothermal, sun, wind and wave energy right in our backyard, free for the taking. Utilize it!

Thanks for your attention. Aloha and Mahalo.

Mary True, Pepe`ekee, 96783

**LATE**

**SB-2369**

Submitted on: 2/16/2026 7:16:45 PM

Testimony for EIG on 2/17/2026 3:05:00 PM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Alice Abellanida	Individual	Support	Written Testimony Only

Comments:

I support this bill.

**LATE**

**SB-2369**

Submitted on: 2/16/2026 9:11:58 PM

Testimony for EIG on 2/17/2026 3:05:00 PM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Kathy Shimata	Individual	Support	Written Testimony Only

Comments:

My name is Kathy Shimata & I live in Honolulu. I support SB2369 because it would make the state commission the first-ever report on how Hawai'i can transition to clean, renewable energy without burning things. All of the existing plans involve dressing up biofuels and waste-based fuels as green, even though they're just different harmful compared to fossil fuels and can actually be worse in many ways. Some existing plans also promote nuclear power or liquified natural gas (a fossil fuel). We need a genuine path forward that doesn't rely on dressing up dirty fuels as green and sustainable.

I urge you to support SB2369.

Mahalo,

Kathy Shimata

**LATE**

**SB-2369**

Submitted on: 2/17/2026 12:21:46 AM

Testimony for EIG on 2/17/2026 3:05:00 PM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Inam Rahman	Individual	Support	Written Testimony Only

Comments:

Testimony in Support of SB2369

Relating to Combustion-Free Energy Solutions

2026 Legislative Session – State of Hawaii

Chair, Vice Chair, and Members of the Committee:

I strongly support SB2369, which directs the Hawaii State Energy Office to conduct a comprehensive, sector-based study identifying the most cost-effective pathways to decarbonize Hawaii’s energy system using combustion-free renewable solutions.

Hawaii has some of the highest electricity prices in the nation, largely because we depend heavily on imported fuels. At the same time, we have statutory climate commitments and a 2045 renewable energy goal. The question is not whether we transition — but how we do so in a way that protects ratepayers, taxpayers, and working families.

SB2369 is important because it prioritizes data-driven planning rather than assumptions. By examining electricity, heating, and transportation sectors — and identifying which can be decarbonized most quickly and cost-effectively — the bill provides a roadmap to avoid expensive missteps and stranded assets.

Economic Considerations

Different decarbonization pathways have different cost implications:

- Conservation and efficiency measures typically deliver the fastest and most affordable emissions reductions, lowering bills for consumers.
- Electrification paired with renewable generation and storage may require near-term grid investment but can reduce long-term exposure to volatile imported fuel prices.
- Heavy reliance on alternative liquid fuels or imported synthetic fuels may appear convenient but could lock Hawaii into higher long-term energy costs.
- Large-scale hydrogen or new fuel infrastructure could increase ratepayer burdens if not carefully evaluated for efficiency and lifecycle cost.

A rigorous study comparing these pathways will help prevent unintended rate increases and ensure we choose strategies that deliver both emissions reduction and affordability.

### Learning from Other States

Other states such as Massachusetts, California, and Washington have conducted similar pathway or roadmap studies to guide long-term climate strategy. Those analyses have proven valuable in sequencing investments, improving grid reliability, and protecting consumers from unnecessary cost exposure.

Hawaii should likewise ground its decisions in careful modeling, scenario planning, and economic analysis tailored to our island grid constraints and import dependence.

### Suggested Amendments to Strengthen the Bill

While I strongly support SB2369, I respectfully suggest the following additions to make it even more effective:

1. Require the report to include detailed ratepayer bill impact modeling, including impacts on low-income households, renters, and small businesses.

2. Include multiple fuel price volatility scenarios to account for global oil market fluctuations.
3. Require workforce transition and job impact analysis to ensure local economic opportunity is maximized.
4. Include an implementation roadmap with timelines, permitting considerations, and grid infrastructure needs.
5. Mandate stakeholder engagement, including utilities, labor, consumer advocates, environmental groups, and business representatives.
6. Require cost comparison between direct electrification and alternative combustion-based fuels on a full lifecycle basis.

These additions would ensure that the study is not merely academic but actionable, transparent, and protective of Hawaii's families.

## Conclusion

SB2369 does not mandate a specific technology; rather, it asks Hawaii to choose wisely. By prioritizing conservation, efficiency, electrification, storage, and combustion-free renewable energy — and by grounding decisions in rigorous cost analysis — we can advance climate responsibility while safeguarding affordability.

This is prudent governance.

I respectfully urge the Committee to pass SB2369 with the suggested strengthening amendments.

Warm regards,

Dr. Inam Rahman

Waipahu, Hawaii

**LATE**

**SB-2369**

Submitted on: 2/17/2026 10:19:34 AM

Testimony for EIG on 2/17/2026 3:05:00 PM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Testify</b>
Steve Parsons	Individual	Support	Written Testimony Only

Comments:

Goob bill. Pass it!

Steve Parsons Hanapepe