



# UNIVERSITY OF HAWAII SYSTEM

## Legislative Testimony

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Testimony Presented Before the  
Senate Committee on Ways and Means  
Tuesday, March 2, 2021 at 9:30 a.m.

By

Richard Rocheleau, Director  
Hawai'i Natural Energy Institute  
University of Hawai'i at Mānoa

### SB 987 SD1– RELATING TO GREENHOUSE GAS EMISSIONS

Chair Dela Cruz, Vice Chair Keith-Agaran, and members of the Committee:

SB 987 SD1 proposes to convene a Sustainable Aviation Fuel Task Force within the Hawai'i Natural Energy Institute (HNEI) to develop a state action plan to reduce the greenhouse gas (GHG) intensity of international air transportation from Hawai'i.

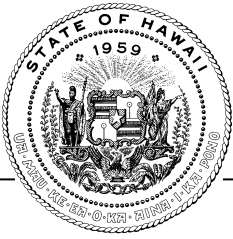
While HNEI agrees that emissions associated with aviation fuel must be included in efforts to reduce GHG emissions, and that there is urgency to GHGs from all sources, we are concerned that this bill, in its current form, would not achieve the desired goals.

Specifically, while aviation fuel comprises a significant fraction of our fossil fuel usage; and contributes a significant fraction of Hawai'i's GHG emissions; and is, arguably, the area for which the fewest market-ready solutions are available; the potential innovations to reduce GHG from aviation are intrinsically linked to all other energy sectors.

HNEI also comments that the subject matter to be requested from the task force overlaps with other proposals the Legislature is considering, such as for HNEI, Hawai'i State Energy Office, and others named in this task force to undertake and participate in a statewide strategic energy plan. HNEI believes that the development of alternatives for sustainable aviation fuel, is more likely to result in actionable recommendations if included as part of an overall statewide energy plan. If further work is required upon completion of the statewide plan, such a task force focused on aviation fuel could be convened to build on the outcome of the plan.

HNEI stands ready to assist in the development of the overall statewide plan that addresses all the state's energy sectors to achieve a resilient, clean energy, decarbonized economy.

Thank you for the opportunity to testify.



# HAWAII STATE ENERGY OFFICE STATE OF HAWAII

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GOVERNOR

SCOTT J. GLENN  
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Testimony of  
**SCOTT J. GLENN, Chief Energy Officer**

before the  
**SENATE COMMITTEE ON WAYS AND MEANS**

Tuesday, March 2, 2021  
9:30 AM  
State Capitol, Conference Room 211 & Videoconference

Comments in consideration of  
**SB 987, SD1**  
**RELATING TO GREENHOUSE GAS EMISSIONS.**

Chair Dela Cruz, Vice Chair Keith-Agaran, and Members of the Committee, the Hawaii State Energy Office (HSEO) offers comments on SB 987, SD1, which would establish a sustainable aviation fuel task force within Hawai'i Natural Energy Institute. HSEO defers to HNEI on administration of the measure.

Aviation fuel is a very important area for innovation, and Hawai'i is uniquely positioned to develop solutions and to continue to be a leader in this area. Also, greenhouse gas emissions from air travel are a particularly significant area to address, since jet fuel has historically been one of the largest sources of Hawai'i's greenhouse gas emissions and currently has the least market-ready substitutes available.

While HSEO fully appreciates the intent of the bill, the envisioned twenty-member task force would take on an ambitious, wide-ranging, and complex array of tasks in a relatively short time period with at least two public meetings per year, an interim report to the Legislature at the end of 2021, and a final report to the Legislature at the end of 2022, ceasing to exist at the end of June, 2023. Furthermore, the subject matter of this task force overlaps with other proposals the Legislature is considering, such as for HNEI, HSEO, and others named in this task force to undertake and participate in a statewide strategic energy plan, which would require the examination of aviation fuel.

HSEO believes the interests of all would be best served by focusing on a statewide energy plan and the work of such a task force building on the outcome of the plan.

HSEO's comments are guided by its mission to promote energy efficiency, renewable energy, and clean transportation to help achieve a resilient, clean energy, decarbonized economy.

Thank you for the opportunity to testify.



Testimony from Gene Harrington, Biotechnology Innovation Organization

In support of SB 987 SD 1 – Relating to Greenhouse Emissions

Senate Committee on Ways and Means

Tuesday, March 2, 9:30 am

Aloha Chair Dela Cruz and members of the committee,

The Biotechnology Innovation Organization (BIO) is in strong support of SB 987 SD1.

The nation's transportation sector leads all others in greenhouse gas emissions. As we look to decarbonize travel—including both road transport and aviation—sustainable fuels are increasingly important because we can't rely on electrification alone. Through biotechnology, our companies are going beyond ethanol and developing low carbon fuels from sustainable sources to keep us moving, including those made from novel feedstocks like industrial waste gases and algae. BIO is in strong support of this initiative and looks forward to working with the lawmakers on innovative solutions to our climate change challenges.



# Environmental Caucus of The Democratic Party of Hawai'i

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Tuesday, March 2, 2021, 9:30 pm

Senate Committee on Ways and Means

SENATE BILL 987 – RELATING TO GREENHOUSE GAS EMISSIONS: Convenes a Sustainable Aviation Fuel Task Force

Position: Strong Support

Me ke Aloha, Chair Donovan Del Cruz, Vice-Chair Gilbert Keith-Agaran, and Members of the Committee on Ways and Means:

The latest IPCC report (2021) has moved the timetable up when Planet Earth needs to get a handle on its greenhouse gas emissions if we are not to lose the habitability we are evolved for. Each new report ratchets up the danger, raising awareness of ice shelf collapse, methane feedback loops, toxic ocean dead zones, increased severity of storms and droughts.

Aviation fuel accounts for the largest sector of fossil fuel emissions, greater than ground transportation and far greater than electricity generation. It is the lifeblood of the tourism industry that Hawaii depends on. “Building back better” means leaping outside the box and accomplishing more goals simultaneously. The industry proclaims this to be a high priority, promising clean flights on short hops across Europe, much like interisland flight, and the challenge will double for high altitude trans-oceanic flights, where the greenhouse gas emissions have deadlier effect.

As it is, if the total allowable emissions to maintain our way of life were divided among every person living, one round trip from the west coast to Hawaii would blow through each visitor’s annual budget and 4/5 of every Hawaii resident’s budget. It’s time to get serious about the tradeoffs between a tourism economy and a habitable archipelago.

Whether Hawaii can lead the way, we need to be prepared to implement and promote all options that may become available. The Environmental Caucus is not clear that the proposed representation on the Task force is capable of more than integrating scientific discovery, technical implementation, and rational State policy, to be effected as soon as possible. We assume that a functioning agency can monitor developments in perfecting the aviation systems that serve the State of Hawaii and can present a cogent plan for consideration, and convene the task force at suitable times for action and guidance. As the State Energy Office notes, some additional support is likely to be necessary to wrap this effort into already forceful activities. The Environmental Caucus heartily supports the ambitious goals and the efficient functioning of the Energy Office, and supports additional staffing and funding as may be required to move the needle on this issue.

This bill is supported by the State Office of Planning and the State Energy, as well as the broad spectrum of grass roots organizations interested in promoting environmental awareness.

The Environmental Caucus strongly supports this bill; mahalo for the opportunity to address this issue.

/s/ Charley Ice, Co-Chair, Energy and Climate Action Committee, Environmental Caucus of the Democratic Party



**Airlines for America®**

*We Connect the World*

**Testimony**

**Written Testimony of Airlines for America  
in Support of Senate Bill 987 Relating to Greenhouse Gas Emissions**

**Submitted by Nancy N. Young  
Vice President, Environmental Affairs**

Airlines for America® (A4A) appreciates the opportunity to provide written testimony in support of Senate Bill (SB) 987,<sup>1</sup> which would establish the Sustainable Aviation Fuel Task Force within the Hawaii State Energy Office (HSEO).<sup>2</sup> This bill would complement the aviation industry's efforts to reduce its greenhouse gas (GHG) emissions while supporting the development of a sustainable aviation fuel (SAF) industry in Hawaii. We endorse the measure and encourage the legislature to adopt it.

By way of background, the U.S. airlines are a very small contributor of man-made GHG emissions. Before COVID-19 struck, we were transporting a record 2.5 million passengers and 58,000 tons of cargo per day,<sup>3</sup> while contributing just 2 percent of our nation's GHG emissions.<sup>4</sup> Indeed, our members have been and remain keenly focused on fuel efficiency and GHG emissions savings. For the past several decades, the U.S. airlines have dramatically improved fuel efficiency and reduced GHG emissions by investing billions in fuel-saving aircraft and engines, innovative technologies like winglets (which improve aerodynamics), and cutting-edge route-optimization software. As a result, the U.S. airlines have improved their fuel efficiency over 135 percent since 1978, saving over 5 billion metric tons of carbon dioxide (CO<sub>2</sub>), which is equivalent to taking more than 27 million cars off the road on average in *each* of those years. Looking at a more recent snapshot, data from the Bureau of Transportation Statistics confirm that the U.S. airlines improved their fuel- and CO<sub>2</sub>-emissions efficiency by 40 percent between 2000 and 2019.

But the U.S. airlines are not stopping there. Since 2009, we have been active participants in a global aviation coalition that committed to 1.5 percent annual average fuel efficiency improvements through 2020, with goals to achieve carbon-neutral growth beginning in 2020 and a 50 percent net reduction in CO<sub>2</sub> emissions in 2050, relative to 2005 levels.<sup>5</sup> The initiatives the

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<sup>1</sup> Available at [https://www.capitol.hawaii.gov/session2021/bills/SB987\\_PDF](https://www.capitol.hawaii.gov/session2021/bills/SB987_PDF).

<sup>2</sup> A4A is the principal trade and service organization of the U.S. airline industry. A4A's members are: Alaska Airlines, Inc.; American Airlines Group; Atlas Air, Inc.; Delta Air Lines, Inc.; Federal Express Corporation; Hawaiian Airlines; JetBlue Airways Corp.; Southwest Airlines Co.; United Continental Holdings, Inc.; and United Parcel Service Co. Air Canada is an associate member.

<sup>3</sup> See <https://www.airlines.org/dataset/a4a-presentation-industry-review-and-outlook/#>.

<sup>4</sup> See U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018* (April 2020) at Table ES-6: U.S. Greenhouse Gas Emissions Allocated to Economic Sectors (p. ES-25); Table 2-13: Transportation-Related Greenhouse Gas Emissions (p. 2-33). Available at: <https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf>.

<sup>5</sup> See A4A, "A4A's Climate Change Commitment," available at <https://www.airlines.org/a4as-climate-change-commitment/>; A4A, "Airlines Fly Green," available at <https://www.airlines.org/airlines-fly-green/>;

U.S. airlines are undertaking to further reduce GHG emissions are designed to limit responsibly and effectively their fuel consumption, GHG contribution, and potential climate change impacts while allowing commercial aviation to continue to serve as a key contributor to the U.S., state, and local economies as our nation works to recover from the devastating COVID-19 crisis.

The availability of sustainable aviation fuel (SAF) in significant quantities is a key pillar to the achievement of the aviation industry's goals, and A4A and its members have been working hard to lay the groundwork for the establishment of a viable SAF industry. SAF is particularly critical to the industry's GHG reduction strategy as aviation, unlike ground transportation, cannot electrify in the near-term and is therefore reliant on liquid fuels.

The aviation industry has created the foundation for airline deployment of SAF, which results in an up to 80 percent reduction in GHG emissions relative to petroleum-based jet fuel, through our Commercial Aviation Alternative Fuels Initiative<sup>®</sup> (CAAFI), a public-private partnership with the Federal Aviation Administration and other stakeholders that is working to ensure the development and deployment of SAF,<sup>6</sup> as well as other programs. However, as SAF currently tends to be considerably more expensive than traditional jet fuel and there is very little supply, we need complementary government policies to make SAF commercially viable and to scale up supply. This is where SB 987 could prove helpful. By establishing a task force whose purposes would include, *inter alia*, preparing a work plan to assist commercial aviation in meeting its 2050 CO<sub>2</sub> reduction goal, furthering the development of a productive SAF industry in the State, providing SAF-related recommendations to the legislature, and evaluating the prospects of Hawaii joining with other jurisdictions that have established low carbon fuels policies, the State would send a very positive signal that it is serious about promoting a new, green industry and supporting the aviation sector's efforts to meet its rigorous climate goals.

While A4A supports SB 987 and the creation of a Sustainable Aviation Fuel Task Force, we would like to take this opportunity to offer a number of suggestions pertaining to particular provisions of the bill. First, although we did not participate in the Hawaii Aviation and Climate Action Summit that took place in late 2019, we note with respect to the third finding on page 3 of the bill that the International Civil Aviation Organization's (ICAO) Carbon Offsetting and Reduction Scheme for International Aviation, better known by its acronym, CORSIA, does not require international flights "to reduce their aviation [GHG] emission[s] to fifty per cent below 2005 levels by 2050." That 50% reduction target is the global aviation industry's own climate commitment. The ICAO CORSIA agreement supports GHG emissions savings now and through 2035 by imposing an obligation for aircraft operators to offset any increases in carbon emissions from international flights. This offsetting obligation, which initially applies to aircraft operators from the U.S. and 87 other countries beginning this year, will become applicable to virtually all international flights in 2027.<sup>7</sup> Designed to help aviation achieve carbon-neutral growth beginning

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see also Air Transport Action Group, "Climate Change," available at <https://www.atag.org/our-activities/climate-change.html>.

<sup>6</sup> For more on CAAFI, see <http://caafi.org/>.

<sup>7</sup> Under the agreement made by the 193 countries party to ICAO, CORSIA's offsetting obligation is being implemented in stages. Starting in 2021, offsetting is required for international flights to/from those countries (of which there are 88, including the U.S.) that agreed to participate in the three-year pilot phase (2021-2023) and three-year first phase (2024-2026) of CORSIA. The offsetting obligation becomes mandatory for flights to/from all countries except the least developed countries beginning in 2027. Importantly, CORSIA does not apply to domestic (non-international) flights.

in 2020, CORSIA enables aircraft operators to reduce their annual offsetting obligation by using SAF. Given that the 50% GHG reduction in 2050 is actually an industry-wide target, we respectfully request that the language in subsection (3) be revised to read as follows (with proposed additions shown in underline and proposed deletions shown in strikethrough) and a new subsection (4) be added directly after it:

(3) On January 1, 2021, a number of these ~~international~~ flights to and from Hawai'i will start to come under the mandate ~~became~~ subject to the offsetting requirements established by the International Civil Aviation Organization's (ICAO) Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), ~~with virtually all international flights to and from Hawai'i becoming subject to CORSIA offsetting in 2027 to reduce their aviation greenhouse gas emission to fifty per cent below 2005 levels by 2050;~~

(4) Commercial airlines have committed to reducing their greenhouse gas emissions by fifty per cent below 2005 levels in 2050;

With respect to subsection (6) on pages 3-4, there are now seven SAF production processes (or "pathways") that have been approved by ASTM International. In addition, as discussed above, A4A maintains that SAF has not yet reached "commercial scale," either in the continental United States or elsewhere. Hence, we suggest that the finding in subsection (6) (which would be renumbered as subsection (7) due to the addition of new subsection (4)) be revised to read as follows:

(7) Sustainable aviation fuels ~~have~~ been demonstrated ~~at commercial scale on commercial flights~~ in the ~~continental~~ United States and can be manufactured in ~~six~~ seven different ~~American Society for Testing Manuals (ASTM) International~~ approved and Federal Aviation Administration (FAA) certified ways from agricultural, animal, municipal, and construction wastes as well as purpose-grown crops and forest materials;

Lastly, in subsection (9) (which under our proposal would be renumbered as subsection (10)) on pages 4-5, we recommend that the term "emissions" be inserted directly after gas in line 5, the word "by" in line 7 be replaced with "due to the displacement of", and the words "of oil" be inserted directly after barrels in line 6.

We observe that the penultimate paragraph in section 1 of the bill is phrased awkwardly. Perhaps the words "would allow the State to continue" should be inserted in place of the word continues in line 20.

Turning now to the legislative text in section 2 of the bill, largely consistent with what we have stated above regarding CORSIA and the aviation industry's self-imposed 2050 GHG reduction goal, we respectfully request that subsection (a)(1) be revised to read as follows:

(1) Prepare a work plan and regulatory scheme for implementing the maximum practically and technically feasible and cost-effective reductions in greenhouse gas emissions from aviation ~~transportation sources or categories of sources of greenhouse gases~~ to help commercial airlines serving Hawaii meet the mandate set for international commercial aviation by the International Civil Aviation Organization (ICAO), specifically the Carbon Offsetting and Reduction Scheme for International



Aviation (CORSA), via the use of sustainable aviation fuel to the maximum extent practicable, as well as the airlines' goal to reduce aviation their greenhouse gas emissions by to fifty per cent below 2005 levels by in 2050;

We note, too, that any such “regulatory scheme” may encompass positive incentives for the development and deployment of SAF, but due to federal preemption, may not regulate aircraft GHG emissions or the content of and emissions related to jet fuel.<sup>8</sup>

In subsection (c), which specifies the composition of the task force, we question the need for including “[a] fuel refiner” and “[a] carbon offset project practitioner,” and recommend that subsection (c)(18) be revised to read “Sustainable aviation fuel producers.”

With these proposed revisions, we express our support for the creation of the Sustainable Aviation Fuel Task Force. Thank you for your consideration.

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<sup>8</sup> Federal preemption is established both under the federal Clean Air Act (CAA) and federal aviation law. For example, section 233 of the CAA explicitly preempts states and their political subdivisions from “adopt[ing] or attempt[ing] to enforce any standard respecting emissions of any air pollutant from any aircraft or engine thereof unless such standard is identical to a standard” established by the U.S. Environmental Protection Agency. 42 U.S.C. § 7573. Further, courts have long held that the Federal Aviation Act of 1958 creates a “uniform and exclusive system of federal regulation” of aircraft that preempts state and local regulation. *Burbank v. Lockheed Air Terminal, Inc.*, 411 U.S. 624, 639 (1973); see also *American Airlines v. Department of Transp.*, 202 F.3d 788, 801 (5th Cir. 2000) (aviation regulation is an area where “[f]ederal control is intensive and exclusive”) (quoting *Northwest Airlines, Inc. v. Minnesota*, 322 U.S. 292, 303 (1944)). This pervasive federal regulatory scheme extends not only to aircraft in flight, but also to aircraft-related operations on the ground. In addition, the Airline Deregulation Act precludes states from “enact[ing] or enforc[ing] a law, regulation, or other provision having the force and effect of law related to a price, route or service.” 49 U.S.C. § 41713(b)(1).

**SB-987-SD-1**

Submitted on: 2/28/2021 6:43:39 PM

Testimony for WAM on 3/2/2021 9:30:00 AM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Ted Bohlen	Testifying for Climate Protectors Hawaii	Support	No

Comments:

To: The Honorable Donovan Dela Cruz, Chair, The Honorable Gilbert Keith-Agaran, Vice Chair, and members of the Senate Committee on Ways and Means

From: Climate Protectors Hawaii (by Ted Bohlen)

Re: Hearing SB987 SD1 RELATING TO GREENHOUSE GAS EMISSIONS.

Hearing: Tuesday, March 2, 2021, 9:30 a.m., Rm. 211 and by videoconference

Aloha Chair Dela Cruz, Vice Chair Keith-Agaran, and members of the Senate Committee on Ways and Means:

Position: **STRONG SUPPORT** FOR SB987 SD1

The Climate Protectors Coalition is a group focused on reversing the climate crisis. As a tropical island State, Hawaii will be among the first places harmed by the global climate crisis, with more intense storms, loss of protective coral reefs, food insecurity, and rising sea levels destroying our shorelines. We must do all we can to reduce our carbon footprint and become carbon negative as soon as possible.

Aviation is the largest source of greenhouse gas emissions for Hawaii, larger than either ground transportation or electric power generation. One of the areas where Hawaii can make the most progress in reducing greenhouse gas emissions is in decarbonizing aviation jet fuel and making more sustainable fuel.

SB987 SD1 would convene a Sustainable Aviation Fuel Task Force under the Hawaii Natural Energy Institute for administrative purposes to develop a state action plan to reduce the greenhouse gas intensity of international air transportation from Hawaii.

This measure positions the State to continue to be a leader in the promotion of sustainable aviation fuels by providing opportunities for greenhouse gas reduction and the development of sustainable aviation fuels.

One part should be amended. The bill in Section 2(a)(1) states a purpose is to:

Prepare a work plan and regulatory scheme for implementing the maximum practically and technically feasible and cost-effective reductions in greenhouse gas emissions from transportation sources or categories of sources of greenhouse gases to help commercial airlines serving Hawaii meet the mandate set for international commercial aviation by the International Civil Aviation Organization, specifically the Carbon Offset and Reduction Scheme for International Aviation to reduce aviation greenhouse gas emission to fifty per cent below 2005 levels by 2050;

The first part of this is fine, but **the Committee should amend the bill by striking the second half containing the words:**

**"to help commercial airlines serving Hawaii meet the mandate set for international commercial aviation by the International Civil Aviation Organization, specifically the Carbon Offset and Reduction Scheme for International Aviation to reduce aviation greenhouse gas emission to fifty per cent below 2005 levels by 2050;"**

**The efficacy of offsets is questionable, it should not be a State purpose to help airlines meet mandates, and it would not be prudent to bind Hawaii to this particular scheme for reductions until 2050 at this time.**

With this one amendment, SB987 SD1 is a good bill that will assist our efforts to reduce Hawaii's greenhouse gas emissions, helping us to lead on mitigating the climate crisis, and saving costs for the State. Please pass this bill!

Mahalo for the opportunity to testify in **strong support** of the intent of this very important legislation.

Climate Protectors Coalition (by Ted Bohlen)



To: The Senate Committee on Ways and Means  
From: Sherry Pollack, 350Hawaii.org  
Date: Tuesday, March 2, 2021, 9:30am

**In support of SB987 SD1**

Aloha Chair Dela Cruz, Vice Chair Keith-Agaran, and Committee members of Ways and Means,

I am Co-Founder of the Hawaii chapter of 350.org, the largest international organization dedicated to fighting climate change. On behalf of our 6,000 members and supporters, 350Hawaii.org **supports SB987 SD1, and respectfully offers amendments.**

This important bill would convene a Sustainable Aviation Fuel Task Force within the Hawaii State Energy Office to develop a state action plan to reduce the greenhouse gas intensity of international air transportation from Hawaii. Aviation is the largest source of greenhouse gas emissions for Hawaii, with nearly a third of the energy consumed in the State from jet fuel. Therefore, one of the areas where Hawaii can make the most progress in reducing greenhouse gas emissions is in decarbonizing aviation jet fuel and making more sustainable fuel. Addressing this critical issue cannot be overstated.

350Hawaii respectfully requests amendments to this measure. First, we strongly encourage that the make-up of the task force includes more community representation. Second, we urge deleting references in this bill regarding carbon offsets. Carbon offset schemes claim to compensate for emissions with no cost to the climate – however they don't actually do that. Studies show they are simply an accounting trick. Offsetting does not cancel out our emissions, trees planted today can't grow fast enough to do that. Scientists are warning that major and unprecedented reductions in emissions are needed **now** for us to have a chance to avoid untold suffering from climate breakdown. Let's not waste precious time and effort with false solutions. Our children's future depends on it.

Mahalo for this opportunity to testify on this very important bill.

Sherry Pollack

Co-Founder, 350Hawaii.org