

The letter which follows is a request which is being directed to the Honolulu Climate Change Commission to oversee and report to the public, the counties, the legislature and the executive branch, a study of the greenhouse gas emissions associated with air transport of visitors to Hawaii in the year 2019 and ongoing.

This request arises because of increased attention given by the media and in public discourse to the issue of the impact of tourism on the social and natural environment. It is of interest that little attention has been given in the past to the issue of the greenhouse gas impacts of tourism. The State of Hawaii Greenhouse Gas Inventory identifies the category of 'Domestic Aviation' and assigns in 2019 a value of 3.2 million tons CO₂(e). It is notable however that this figure includes only emissions from departures to the continental United States. It does not include US arrivals. It does not include international flights, either arrivals or departures. It does not include the most consequential of the 'non-CO₂' GHG emissions, whereas the science has been aware for over a decade that 'non-CO₂' emissions account for the majority, and at the altitudes flown to Hawaii likely more than 2x that, of the global warming emissions. In 2019, Civil Beat published an article by Stuart Yerton identifying 6 million tons CO₂ as a more appropriate number by including emissions from round-trip and international travel, but again ignoring the 'non-CO₂' emissions.

In 2020 a 'white paper' was presented to the Honolulu Climate Change Commission and the Hawaii State Climate Commission by Tawn Keeney MD (myself) which calculated the GHG emissions associated with air transport of visitors to be approximately 18 million tons CO₂(e). This number was contrasted with a total GHG emissions from the state's electricity generation and petroleum refining at 7.8 million tons and total ground transportation of 4 million tons. In the HCCC this paper was described as 'very important'.

The difference between the conclusions of the Civil Beat article and the Keeney paper can be ascribed to the inclusion of 'non-CO₂' emissions in the latter. ICAO, the International Civil Aviation Organization, includes only CO₂ in its GHG emissions calculations, recognizing that there has been incomplete understanding of the GHG effects of aviation's 'non-CO₂' emissions. Yerton's study used the ICAO calculations. However a more complete understanding of the science of Aviation's non-carbon emissions is reflected in two important reports released in 2021.

First, in February, the most comprehensive study to date of aviation's GHG emissions was released in the Journal of Atmospheric Environment by Lee, et. al., entitled "The Contribution of Global Aviation to Anthropogenic Climate Forcing, 2000 to 2018". The summation statement in the abstract of this dense and technical paper is the following: "CO₂-warming-equivalent emissions based on global warming potentials (GWP method) indicate that aviation emissions are currently warming the climate at approximately three times the rate of that associated with aviation CO₂ emissions alone."

Second, the IPCC 6th Assessment Report, released August 9, includes a 130 page chapter on 'Short Lived Climate Forcers' which refers to 'non-CO₂' GHG emissions. The section on Aviation states "Our assessment builds on Lee et al. (2020).", citing his above paper six times in this section. The IPCC states, "Their study consists of an updated, comprehensive assessment of aviation climate forcing in terms of RF and ERF based on a large number of studies and the most recent air traffic and fuel use datasets available, new calculations and the normalization of values from published modeling studies, and combining the resulting best estimates via a Monte-Carlo analysis." The IPCC reflects Lee's finding: "Lee et al. (2020a), reports a net aviation ERF for year 2018 emissions of +0.101 W/sq. meter (5-95% likelihood range of 0.055 - 0.145) with major contributions from contrail cirrus (0.057 W/sq. m), CO₂ (0.034 W/sq. m), and NO_x (0.017 W/sq. m)." In conclusion the IPCC author concurs with Lee, "In summary, the net aviation ERF is assessed to be +0.1 W/sq. Meter (+/-0.045) for the year

2018 (low confidence).” “This confidence level is largely a result of the fact that the SLCF-related terms which counts for more than half (66% of the net aviation ERF) are the most uncertain terms.” This is the best estimate that science allows us at this time. (Previously the IPCC had identified the Non-CO2 emissions from aviation above 9,000 meters (more than 90% of air transport to Hawaii) as equivalent to 2x the CO2 emissions with “not less than low confidence (not ‘very low’)”.)

Hence, the two authoritative 2021 documents would be consistent with the conclusion of 18 million tons CO2(e) emissions burden of transport of visitors to Hawaii in 2019. This is a number which is likely to be eye-opening to the Hawaii public and many of its decision makers. That this number dwarfs the combined emissions resultant from all electricity generation, and ground transportation, and yet has had exceedingly little attention derived, makes examination and presentation to the public all the more imperative. It becomes important that this information be disclosed in the near term as decisions will be made in the upcoming legislature having bearing on the disposition of tourism here. Most notably, discussion will be held regarding ‘Green Fees’ for visitors. The information regarding emissions burden of travel here should be an important part of that discussion, and formulation of any legislation introduced.

I have submitted a proposal to Representative Lowen and Senator Gabbard of a Transient Accommodations Tax ‘Green Fee’ of \$20/night with a yearly adjustment mechanism informed each year by investigation and reporting from the Hawaii State Climate Commission. (Last year Representative Lowen introduced a proposal for a \$20 per person TAT ‘green fee’.) Discussion with environmental law professor Richard Wallsgrave suggested that a well crafted proposal reflecting this more ambitious fee structure might well avoid challenge which could arise on the basis of ‘Restraint of Commerce’. He indicated that he would assign a group of his environmental law students the project of studying this issue during the current semester.

I have also submitted a letter to a Council-person in each of the State’s County Councils proposing submission of a Resolution into each Council asking the Honolulu Climate Change Commission to oversee and present to the legislature, the executive branch, and themselves, a study of the GHG emissions resultant from air transport of visitors. My rationale for doing so is the model which I have repeatedly seen of the commissions being asked by a governmental body to perform a particular study, rather than the impulse for such study arising from the commission itself. In reflecting on that model, several months ago I had asked the HCCC to ask the State Climate Commission to request this study from the HCCC. I have proposed that this study be presented to the public by January 10, 2022 and, given time constraints even in the face of a Climate Emergency, that the HCCC be allowed facility to work with other governmental agencies or resources in preparation of this report. I anticipate discussion with the Council-persons to whom I have presented this request within this current week.

Given all of the above, what would be my wishes of the HCCC? That is inconsequential, but the public’s right, and leadership’s responsibility, to know this GHG emissions aspect of tourism to Hawaii suggests answering this question would be HCCC’s kuleana. By prominently publishing a 600 word condensation of my paper, the Star Advertiser has signaled that the public is ready to engage an examination of this issue. I will continue trying to bring this subject before the public and leadership. I therefore ask that the Honolulu Climate Change Commission or it’s administrator would communicate with the executive or chair of each County Council during the current week beginning August 16, and express its concurrence with the desirability, and consent, for performing or overseeing such a study. In testimony at it’s August 31st meeting I will propose to the Commission that this study be performed, and am herein asking that this proposal be placed on the agenda of that meeting. I am consistently available for discussion of this proposal either by email at hpt@honokaapeople.com or by phone at 808-937-7674.

Mahalo for your consideration,
Tawn Keeney MD

References:

The Contribution of Global Aviation to Anthropogenic Climate forcing for 2000 to 2018

Lee, et al. (2021)

<https://www.sciencedirect.com/science/article/pii/S1352231020305689>

IPCC 6th Assessment Report - Chapter 6: Short Lived Climate Forcers - page 6-64

https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_06.pdf

Hawaii Visitor Air Travel GHG Emissions - Keeney

808ne.ws/3wZbKXQ

The three attachments above are:

1. The letter (depersonalized) which has been written to one council-person from each Council.
2. An attachment to that initial letter of a Resolution request which would be sent to each member of each County Council.
3. A second attachment as a sample proposal for a Council Resolution.

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