Aloha Chair Alegado,

Commissioner Kiana Otsuka has asked that I respond to your request for information in response to Dr. Tawn Keeney's inquiry relating to the need for legislation that mandates a formal study be conducted by an impartial government entity evaluating greenhouse gas (GHG) emissions from the aviation sector, specifically air transport of visitors to Hawai'i.

As you may be aware, Act 238, Session Laws of Hawai'i, formerly House Bill 1800, mandated the Hawaii State Energy Office (HSEO) to conduct a statewide "decarbonization strategy." Specifically, HSEO is tasked to "analyze pathways and develop recommendations for achieving the State's economy-wide decarbonization goals," as set forth in HRS §225P-5. The analysis is required to recommend state actions to address emissions associated with air travel and shipping and how to encourage electrification and adoption of alternative fuels.

Additionally, Act 238 amends HRS §342B-71 relating to Air Pollution Control and Greenhouse Gas Emissions and requires the Director of Health to submit a report to the Legislature by December 31, 2023, indicating the measurement of 2005 greenhouse gas emissions in the State, **including emissions from airplanes.** The amendment requires the Director of Health complete an annual emissions inventory report, starting after 2017 to track emissions inclusive of airplanes, and the state's overall GHG reduction progress.

HSEO is currently working closely with the Department of Health Clean Air Branch and their consultants on the next report iteration and has requested to be more actively involved in the drafting of the report for future years, specifically focusing on energy sector emissions. HRS 342B-71 is ultimately the guiding framework for GHG emissions tracking in the State and the methodology used in the report is consistent with inventories nationally and internationally. HSEO plans to use the emissions inventory as a foundation for the decarbonization strategy; however, as a part of the study, HSEO seeks to identify gaps and recommend actions to address these gaps.

As an example, the current methodology used to calculate and quantify emissions from the aviation sector uses flight volumes which include flight volumes originating from Hawai'i airports to Domestic/International destinations, and vice-versa, and assumes a fuel burn multiplier and multiplies by number of flights and the length of each segment. To account for round trips you would multiply the estimates presented by two (the report does not do this since it only evaluates origination flights, in accordance with IPCC methods to avoid double counting between states). While there is some level of error associated with this method of accounting, it is a standard method and likely the best method to quantify emissions with publicly available data. That said, an associated policy recommendation may be to require airlines to report their GHG emissions and/or fuel use and burn rates. To do this, would likely require an evaluation of the feasibility of implementing reporting requirements for airlines flying into or out of the state.

While I believe Act 238 is an important step in addressing some of Dr. Keeney's concerns, it will certainly not be the end of efforts to improve greenhouse gas accounting and reduction strategies. We will also continue our efforts to leverage federal funding and engagement with the private sector to advance our work on these issues.

Some additional activities supporting future GHG emission reduction in the aviation sector with which HSEO is engaged include:

Alternative Aviation Fuels Feasibility Studies

The Boston-based glider manufacturer REGENT announced they will partner with Pacific Current and Mokulele Airlines to bring sea gliders to Hawai'i. Pacific Current, a Hawaiian Electric Industries subsidiary, will look at infrastructure needs, electricity requirements, and environmental and community impacts in evaluating the feasibility of electric sea gliders in Hawai' i. Mokulele Airlines, will be the Hawai' i launch partner, with the airline having paid deposits to be at the front of the line for a 12-passenger sea glider model called Viceroy. Hawaiian Airlines is also exploring electric sea glider technology with REGENT but has not committed to purchasing any of the sea gliders. A news release from REGENT said Hawaiian agreed to invest to support the initial design of the company's next-generation sea glider with capacity for 100 people. HSEO can support these efforts through technical assistance as the project approaches fruition.

Hawaii DOT-Airports Scoping Project

The HSEO is engaged with the Hawaii Department of Transportation (HDOT) project scoping activity through the Federal Emergency Management Agency's Building Resilient and Innovative Communities grant program to examine the feasibility of microgrids and resilience hub implementation at state-owned airports. The project is evaluating the opportunity to implement microgrids as a redundant power source not only to maintain airport function and services when the grid is down, but to expand airport services post-disaster to benefit the community. Airport resilience hubs could serve as a centralized response area and zone for critical service allocation after a natural disaster where water, food, medical supplies, and electricity charging services can also be distributed. The need for microgrids and resilience hub infrastructure at Hawai'i's airports is underscored by future energy market conditions. Hawai'i is expected to be an early adopting market for short-haul electric aircraft given its island structure and dependence on aviation. The expected large-scale investment in charging infrastructure for ground and air transportation will put new power demands on Hawai'i's grid, but it also presents an opportunity for Hawai'i to build resilience in its energy and power systems by designing with the concept of airports serving as energy and transportation resilience hubs.

Thank you for your time and attention to this critical issue that will require ongoing efforts for years to come.