DAVID Y. IGE
GOVERNOR OF HAWAII

DEPT. COMM. NO. 204

.ELIZABETH A. CHAR, M.D
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:

December 21, 2020

The Honorable Ronald D. Kouchi,
President and Members of the Senate
Thirtieth State Legislature
State Capitol, Room 409
Honolulu, Hawaii 96813

The Honorable Scott K. Saiki, Speaker
and Members of the House of
Representatives
Thirtieth State Legislature
State Capitol, Room 431
Honolulu, Hawaii 96813

Dear President Kouchi, Speaker Saiki, and Members of the Legislature:

For your information and consideration, I am transmitting a copy of the

Plastic Source Reduction Working Group pursuant to Act 254(19). In accordance with Section 93-16, Hawaii Revised Statutes, I am also informing you that the report may be viewed electronically at:

https://health.hawaii.gov/opppd/department-of-health-reports-to-2021-legislature/

Sincerely,

Elizabeth A. Char, M.D.
Director of Health

Enclosures

c: Legislative Reference Bureau
Hawaii State Library (7)
Hamilton Library

Report to the Thirty-First Legislature
State of Hawai‘i 2021

Plastic Source Reduction Working Group

Pursuant to Act 254 (19), Relating to Plastic

Creates the plastic source reduction working group to make recommendations to reuse, reduce, recycle, and recover plastic waste

Prepared by the Hawai‘i State Department of Health
Office of Solid Waste Management
December 2020

Table of Contents

I. Introduction

The Hawai‘i Legislature passed Act 254 (Appendix A) and reads as follows:

> “The legislature finds that the local and global impact of the world’s increasing waste stream is unsustainable and detrimental to the future of Hawai‘i’s economy and people. There has been an exponential rise in single-use foodware items over the past few decades globally, with particularly high increases in plastics derived from fossil fuels. Single-use disposable foodware and packaging—including plastic bottles, caps, lids, straws, cups, and polystyrene and plastic containers—are major contributors to street and beach litter, ocean pollution, marine and other wildlife harm, and greenhouse gas emissions.”

II. Source Reduction vs. Recycling

Until recent years, recycling was the buzzword solution that was promoted to address the plastic waste issue. Although beneficial in many ways, recycling is a post-consumer solution to handle plastic waste. In order to reduce the overall generation of plastic waste, more municipalities are stressing the feasibility of source reduction, which aims to mitigate the issue at the beginning of the plastic lifecycle.

Hawai‘i Revised Statutes Chapter 342G-1 defines *source reduction* as “the design, manufacture, and use of materials to (1) minimize the quantity or toxicity, or both, of the waste produced; and (2) reduce the creation of waste either by redesigning products or by otherwise changing societal patterns of consumption, use or waste generation.” By contrast, *recycling*, as defined in the same section, means “the collection, separation, recovery, and sale or reuse of secondary resources that would otherwise be disposed of as municipal solid waste, and is an integral part of a manufacturing process aimed at producing a marketable product made of postconsumer material.”

III. Impact of Plastics in the Environment

Act 254 cites the following information regarding the impact of plastics in the environment:

> “According to the United Nations, since the 1950s, the production of plastic has outpaced that of almost every other material. Much of the plastic produced is designed to be thrown away after being used only once. As a result, plastic packaging accounts for about half of the plastic waste in the world. Most of this waste is generated in Asia, while America, Japan, and the European Union are the world’s largest producers of plastic packaging waste per capita. […] Only nine percent of the 9,000,000,000 tons of plastic produced has been recycled. Most plastic ends up in landfills, dumps, incinerators, or the environment.”

Additionally, plastic pollution has become increasingly prevalent around the world. More than 500 local municipalities in the US have banned plastic bags, and nine states, including Hawai‘i, have statewide plastic bag bans. Many are also banning the use of expanded polystyrene foam takeout containers (that includes, but is not limited to, products commonly known as Styrofoam) as well as plastic service ware (i.e. cups, straws, forks, knives, etc.) in order to address other types of single-use plastic pollution.

IV. Summary of Act 254

In 2019, the Hawai‘i State Legislature passed Act 254. This act was intended to address the State’s plastic waste issue through source reduction and established the Plastic Source Reduction Working Group (Working Group). The act also identified seven tasks for the Working Group to address:

1. Formulate a plan for reducing and recovering plastic from the Hawai‘i waste stream;

2. Develop strategies to encourage plastic reduction and reuse in the food service industry, such as reusable container incentive programs for customers;

3. Provide recommendations to encourage reuse, reduction, recycling, and recovery of waste and create value added products to innovate and responsibly manage the life cycle of existing resources;

4. Consult with each county that has already enacted ordinances related to single-use plastics such as plastic bags and polystyrene foam containers and develop recommendations for the implementation of a uniform, statewide policy for these items that can replace existing county ordinances and provide businesses with laws that are consistent throughout the State;

5. Consult with stakeholders to develop appropriate exemptions to address concerns of health and safety, lack of suitable alternative products on the market, and lack of infrastructure;

6. Evaluate potential lifecycle and environmental implications of replacing plastic packaging with alternative products; and

7. Shall submit a report of its findings and recommendations, including recommendations for pilot projects for Hawai‘i businesses to phase out single-use plastic packaging, promote reuse, and find sustainable alternatives for packaging, as well as any proposed legislation, to the legislature no later than twenty days prior to the convening of the regular session of 2021.

V. Working Group Members

The Working Group sought to help Hawai‘i to mitigate the damaging effects of plastic waste by including community stakeholders from various industries, organizations, and agencies. The membership of the group is described as follows:

Act 254 Membership Requirements		Member Name and Title	Member Organization
(1)	The director of health or the director's designee;	Lene Ichinotsubo Acting Chief	Department of Health Solid and Hazardous Waste Branch
(2)	The chairperson of the board of land and natural resources or the chairperson's designee;	Clifford Inn Program Specialist	Department of Land and Natural Resources Division of Boating and Ocean Recreation
		Catherine Gewecke Aquatic Biologist	Department of Land and Natural Resources Division of Aquatic Resources
(3)	The president and chief executive officer of the Hawai‘i tourism authority or the president and chief executive officer's designee;	Chris Tatum President & CEO	Hawai‘i Tourism Authority
(4)	Four members, one to be appointed by each of the respective mayors of the city and county of Honolulu and the counties of Hawai‘i, Kaua‘i, and Maui;	Justin Gruenstein Deputy Director	City & County of Honolulu Office of Climate Change, Sustainability and Resiliency
		Sanne Berrig Recycling Specialist	County of Hawai‘i Department of Environmental Management
		Allison Fraley Solid Waste Program Coordinator	County of Kaua‘i Department of Public Works
		Tamara Farnsworth Division Manager	County of Maui Environmental Protection & Sustainability Division
(5)	The State sustainability coordinator;	Danielle Bass State Sustainability Coordinator	State of Hawai‘i Office of Planning
(6)	A representative of the Surfrider Foundation;	Doorae Shin O‘ahu Chapter Coordinator	Surfrider Foundation

Act 254 Membership Requirements		**Member Name and Title**	**Member Organization**
(7)	A representative of Zero Waste O‘ahu;	Nicole Chatterson Director	Zero Waste O‘ahu
(8)	A representative of Sustainable Coastlines Hawai‘i;	Rafael Bergstrom Executive Director	Sustainable Coastlines Hawai‘i
(9)	A representative of the Hawai‘i Food Industry Association	Lauren Zirbel Executive Director Alexis Chapman (alternate)	Hawai‘i Food Industry Association
(10)	A representative of the Hawai‘i Restaurant Association;	Victor Lim Legislative Lead	Hawai‘i Restaurant Association
(11)	A representative of the Chamber of Commerce Hawai‘i;	Sherry Menor-McNamara President & CEO Dan Kouchi (alternate)	Chamber of Commerce Hawai‘i
(12)	A representative of the beverage industry;	David Thorp Senior Director of Governmental Affairs	American Beverage Association
(13)	A representative from the plastic manufacturing industry; and	Adrian Hong President	Island Plastic Bags
(14)	A representative of the recycling industry.	Bruce Iverson Director of Marketing and Development	Reynolds Recycling

VI. Methodology

Peter Adler, Ph.D. facilitated seven meetings over the course of ten months (see Appendix B). Group members attended meetings both in person and virtually due to COVID-19 pandemic restrictions. The group charter (Appendix C) describes the goals of the group as well as ways each member should contribute their ideas and opinions. Members participated in group exercises that exposed them to different perspectives and allowed them to share their own perspectives. Members participated in permitted interaction groups (PIGs) that provided discussion for deeper insight and expertise required for formulating proposed recommendations for the State to address plastic source reduction. These PIGs looked at how to reduce, reuse and recycle plastic in different facets of our community and explored and compared county legislation that promotes single-use plastic reduction in order to gain a better understanding of the current sentiments of the four counties (see Appendix D and Appendix E). Members of these PIGs drafted initial recommendations for the larger Working Group's consideration, and all group members had the opportunity to provide comments and edits in subsequent meetings. The public also participated: all meetings were open to the public and public comments were solicited at every meeting.

VII. Recommendations

Per the legislative mandate, the Working Group has identified multiple ways for government, consumers, and local businesses to achieve greater statewide impacts and help accelerate the transformation to a more plastics-free Hawai‘i.

The Working Group recognizes the complexity of social and economic challenges brought on by the COVID-19 pandemic. Several of the recommendations in this plan serve to diversify the economy while minimizing negative socio-environmental consequences. Some plastic source reduction measures have the opportunity to reduce costs and create new local businesses and jobs. The Working Group also recognizes that some of the included plastic source reduction recommendations can increase consumer costs and/or create new public expenses in the short term.

While the strategy for Hawai‘i's recovery from the impacts of the COVID-19 pandemic are beyond the scope of the Act 254 Working Group tasks, this report offers a range of actions that can be incorporated at the appropriate scale and time to both achieve the long-term goal of plastics reduction and support Hawai‘i's economic recovery toward a sustainable and resilient future.

The Working Group recommends the following in response to the seven specified tasks, and is in no particular order:

1. Create a uniform statewide plastic source reduction standard.

Discussion

A uniform state standard that embodies the most stringent standards of the four counties has both advantages and disadvantages but must be implemented with care and precision.

On the advantage side, businesses must comply with one regulatory regime rather than four potentially different ordinances. Most enterprises and their business-to-business suppliers are accustomed to complying with various state ordinances. A uniform, statewide message (aimed at consumers) is more efficient to create and communicate, and more likely to achieve traction. The State must also have a uniform enforcement protocol, presumably lodged within a state agency. If it is to be enforced by the counties, the counties must receive a substantial portion of their funding from the State of Hawai‘i to accomplish this.

On the disadvantage side, counties are the unit of government closest to people. A statewide standard may inhibit the flexibilities that accompany home rule. More importantly, the four counties have very different demographics and tax bases. Having different recycling capabilities and waste management systems makes complete uniformity difficult for counties to achieve.

a. The new standard must be evolutionary and grown slowly.

Discussion

All the counties have laws and initiatives to reduce plastics but are proceeding somewhat differently. This means implementation of a state standard must proceed slowly and carefully with the Legislature's help. This would allow the counties to slowly harmonize their influence on consumer behavior and achieve greater waste reduction, reuse, and recycling implementation. This has two implications: First, the State must work closely with all four counties to coordinate efforts and slowly raise everyone's capacity in a networked manner. Second, as part of the passage of a state standard, the State must be prepared to make financial investments in the ability of all four counties to meet a new standard.

b. The new standard should start as a policy and evolve to law or provide adequate time for affected entities to implement the new standard.

Discussion

Commencing a statewide standard has advantages and disadvantages. As law, it creates real uniformity, binds future leadership, and capitalizes and perhaps accelerates the movement toward going "green." It could take the form of a statutory target law. Statutory target laws lack implementation plans and only have due dates. They require baselines and can motivate implementation (e.g., "By 2030, plastic disposal shall be reduced by 50% based on 2020 disposal rates…"). Laws can also provide a framework with clear direction on how to achieve said goals (e.g., "By 2025, the law shall prohibit retailers from distributing plastic carryout bags. Plastic carryout bags are defined as…"). These laws will likely require further refinement through the development of rules, in which case, the implementing agency will require the authority to develop rules.

Policies are more flexible, may have shorter lifespans, and demand less commitment. They may be more vulnerable to the whims and tides of politics but may better accommodate important county differences. For example, each county has its own integrated solid waste management plan but manages waste very differently (e.g., County of Hawai‘i does not have curbside collection). Given the varying demographics, full uniformity is unlikely. With a state policy, counties may develop their programs with said guidance. Issuance of policies are not legally enforceable, but also will not require financial support by the legislature to provide or implement.

Finally, if a new standard is made into law, uniformity and enforcement will be required. The implementing agency will also require authority to enforce and issue penalties. As with any new program, positions and appropriations will be required for State implementation.

c. The new state plastics source reduction standard should not be weaker than standards among the four counties.

Discussion
This will require a careful and coordinated balancing act and need the full participation and decision-making of all four counties and the implementing state agency. On the one hand, a new standard must build off the existing laws and practices of all four counties and must not be weaker than the strongest of the four county ordinances. Collaterally, it then needs to create incentives that help the weaker counties become more capable and for the State and counties to grow together.

d. Maintain a public list of each County's regulations and their differences.

Discussion
To enable a steady evolution towards a state standard and county harmonization, and as a starting point, this Working Group recommends that the legislature assign a state agency to maintain, regularly update, and publicize an accurate record of the evolving differences between the counties' ordinances.

The document serves two purposes. First, it provides direct guidance to businesses. Second, it becomes a sentinel reference for the State and the counties to work toward progressively better synchronization. The Working Group has compiled and attached some initial tables (see Appendix D and Appendix E), which compare the evolving requirements of the four counties. This provides a good start and can be updated as implementation work emerges. Counties shall work with the assigned state agency to periodically update and publish the tables.

2. Update the Department of Health (DOH) Health Code as needed to increase the use of reusables in food service.

Discussion
Propose a specific plan and/or changes to the law that allows consumers to bring and use their own containers, business-provided reusable containers, and/or third-party reusable containers when picking up takeout orders from restaurants and when making bulk purchases. There should be a public-facing messaging component to inform the public about any relevant changes to the DOH Health Code. This will help to prevent the misconception that changes to the health code are decisions made by proprietors. Any future statute must create legal liability protections for businesses serving consumers who bring their own containers in cases of food-borne illnesses or other communicable diseases.

The Working Group recognizes that the COVID-19 pandemic has changed restaurant and supermarket practices under federal and state guidance, and that these new long-term practices are not likely to be fully developed by the time this Working Group submits it recommendations. Therefore, any proposed statutory changes should also follow appropriate public health guidelines.

3. Create a single, inclusive, across-the-board 15-30 cent user fee on all single-use service ware items and a separate 15-30 cent user fee on all carryout bags (but not cups, lids, and containers).

Discussion
Create a 15-30 cent fee to apply to single-use service ware items, including straws, utensils, and stirrers. This fee would be inclusive of service ware, so if a customer requests a fork, or both a

fork and a straw, the fee would be the same. The fee would apply to any single-use service ware whether it is plastic, paper, compostable, or otherwise. The fee should be applied to each set of service ware (i.e., if the order includes four forks and four straws, the fee would be applied four times). This fee would not be applied to cups, lids, containers, or bags.

Another 15-30 cent fee would apply to each single-use carryout bag. A 15-cent fee per bag is currently enacted for the City and County of Honolulu.

The Working Group recommends that the fee collection process be modeled after the City and County of Honolulu bag fee. These fees would be paid by the consumers to the businesses. Businesses will retain all the fees collected but must treat those as income and pay general income tax.

4. Enact a tax credit for businesses that invest in modern commercial reuse and washing equipment that reduce the use of plastics in the waste stream.

Discussion

Create a 10-year window and sunset provision of tax incentives for businesses that start offering consumers the option to use their own, to use business-provided reusable, or third-party reusable containers when making take-out orders from restaurants and when making bulk purchases; for existing businesses that invest in new sanitizing equipment to promote reuse over disposal; and for startup businesses that provide water and energy-efficient sanitizing services to other businesses.

The State and the counties will reduce costs in the long run by minimizing the amount of waste they have to deal with, but businesses need to be incentivized to make changes. Those changes will help drive consumer behavior.

5. Organize, finance, and conduct a pilot project that tests the efficacy and expense of making UV-C or other sanitizing technology available.

Discussion

UV-C and other new sterilization technologies may provide opportunities for businesses to sterilize reusable containers and bags. This Working Group recommends the exploration of the functionality of these technologies with a pilot project.

6. Establish a 5-year State-facilitated education campaign about waste reduction.

Discussion

In order to effectively promote changed consumer behavior, the campaign must explain in simple terms the web of connectivity and the relationship between supply and demand. The focus is to change the whole community's awareness rather than only individual consumer behavior. The State of Hawai‘i might also set up a website that serves as a resource. The campaign should make the non-use of plastics engaging and achievable and be able to communicate effectively to a broad spectrum of public audiences (for residents and visitors). Regardless of whether the State contracts a third-party firm to develop and run the campaign or decides to run the campaign in-house, language must be added to require the State to add a funding source. Current resources are not adequate for a state agency to run this type of proposed campaign.

7. Accelerate composting.

Composting offers opportunities to create a value-added product that can increase food production, mitigate greenhouse gas emissions, and treat organic materials as resources. In relation to plastic source reduction, the use of compost leads to healthier soils, which can expand opportunities for local food production and reduce the necessity for packaged imports to our state. As plastics are phased out of waste streams, compostable alternatives will likely increase, and will require further study.

Discussion

Composting can exist across scale. The Working Group recommends that the State take action to not only promote composting but prioritize its growth. There are 20 permitted composting facilities in the state, with three additional applications currently with the DOH. More can be done to accelerate composting in Hawaii. Regionalized and community-based composting has an opportunity to build healthier food systems, reduce transportation burden, pilot compostable container decomposition, reduce large infrastructure costs, and be phased in over time. The following non-comprehensive list of actions is recommended to advance composting and create more resilient systems:

- Create small composting pilot projects with schools, farms, non-profits, and businesses to install in-vessel systems that will serve their specific communities;
- Fund pilot projects on all islands through grants;
- Provide tax incentives to residents and businesses who set up community compost systems;
- Revise composting permit applications to encourage greater small-scale participation;
- Recognize that there are differing health and environmental concerns and controls associated with differing solid waste management facilities, therefore solid waste management facilities should not be treated in the same manner. Act 73, Session Laws of Hawaii 2020, which modifies HRS 183C-4 and HRS 342H-52, exemplifies the consequences of composting being on the same level of concern as landfilling;
- Review and update composting regulations to more clearly identify varying types of operations while ensuring public health and the environment remains protected; and/or
- Further study the life cycle of compostable products and better understand their ability to properly breakdown and their chemical composition.

8. Undertake a fair and careful study of Extended Producer Responsibility (EPR).

Discussion

EPR is a policy approach to waste reduction that encourages manufacturers to design environmentally friendly products by holding them responsible for the costs of managing their products at the end of life. EPR shifts the economic burden of the cost of disposal, recycling, and cleanup from the government to the producer of the product. According to the Organization for Economic Co-operation and Development, assigning such responsibility could in principle provide incentives to prevent wastes at the source, promote product redesign for environmental protection, and support public recycling and materials management goals.

The study should include a comprehensive legislation and literature review on the impacts of a possible EPR law for packaging in Hawai‘i. This study should incorporate lessons learned and discussions from other states and the federal government that have been pursuing parallel efforts to implement EPR.

The study should analyze the following two specific scenarios:

(1) EPR in Hawai‘i independent of other state and federal packaging EPR initiatives; and

(2) packaging EPR in Hawai‘i in conjunction or synchronicity with other state and federal initiatives.

The study should evaluate:

- the best science available;
- costs and benefits to all stakeholders (i.e. environment, consumers, taxpayers, government, and businesses, etc.);
- the pros and cons; as well as
- feasibility.

VIII. Potential Lifecycle and Environmental Implications of Alternative Products

The lifecycle of plastic packaging has been known to have damaging effects on the environment. Hawai‘i’s geographic location makes it especially vulnerable to the impacts of plastic consumption and use around the Pacific Rim (Hawai‘i Ocean Resource Management Plan, 2020). A recent study found that windward beaches collect a greater abundance of marine debris, with concentrations that were 1-2 orders of magnitude more plastic pollution than leeward beaches. Leeward beaches were found to collect debris, which more commonly included “whole items” (i.e. sunglasses or dive masks (45%) on the sea floor, and cigarette filters (48%) on beaches), from local inputs and maritime activities, which are more readily controllable by local residents and visitors. Windward beaches, however, included debris that was highly weathered and buoyant, indicating longer residence time in the ocean and foreign debris origin (Brignac, et al 2019).

One damaging environmental effect is ingestion of plastics by organisms in various stages of their life (including fish species integral to recreational and commercial fisheries, and turtles), which is well documented in Hawai‘i (Clukey et. al., 2017 and Gove et. al., 2019). Ingestion can reduce survivorship because of blockages in the organism’s digestive systems, dilution of food and nutrient absorption, and exposure to persistent organic pollutants that attach onto marine plastic pollution.

In order to make intermediary steps towards a more plastics-free society, the lifecycle and environmental implications of alternative materials and products must be assessed. The State should consider existing lifecycle assessment studies that have made such evaluations (or any new/updated lifecycle analysis as they become available), create policies that discourage the use of the most harmful options, and encourage the use of least harmful options (see Appendix F). The Working Group recommends the legislature take the following actions:

- Refer to existing lifecycle analysis (LCA) studies (or any new/updated LCA as they become available) for plastic alternatives:
    - Prioritize products and options that have the least negative environmental and socio-economic impacts. Variables to consider should include:
        - The total greenhouse gas emissions (Carbon Dioxide equivalent [CO_2e]) generated via a “carbon footprint” (e.g., Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O), Fluorinated Gases, etc.)

- Ecotoxity - Impact on marine, freshwater, and terrestrial organisms via the ingestion process (impacts to marine, freshwater, and terrestrial organisms when ingested) and via the manufacturing process (impacts to marine, freshwater, and terrestrial organisms via production of alternative material). Consider accidental escapement of packaging into the environment during the disposal process into the analysis;
- Fresh water consumption; and
- Feasibility for producers to integrate into their products or processes.

- Refer to LCA studies that have been conducted by academic institutions, government agencies, or environmental consulting firms for feasibility and best available science purposes.

- Integrate the concept that the best plastic packaging alternatives should be coupled with innovative ways of thinking about reducing consumption of disposable products, especially ones that require plastic (circular economies, composting, etc.).

- Analyze options for home-compostable packaging to support the proposed "Accelerate Composting" effort:

  - Identify which packaging is home compostable (in addition to identifying and omitting which home-compostable packaging may contain per- and poly-fluoroalkyl substances (PFAS), as this may be harmful to use for food-growing compost);

  - Test the compostability of these packaging alternatives within the pilot compost projects;

  - Communicate the results to local companies that package their products within the State, in order to incentivize companies to potentially switch over to home-compostable packaging and participate in these local composting programs; and

  - Integrate the participation of local companies that are already utilizing compostable packaging or products.

IX. Personal Statements

Lene Ichinotsubo, Acting Chief
Department of Health Solid and Hazardous Waste Branch

The Department of Health would like to thank the group members for all of their hard work and their ability to work together effectively to provide recommendations to the Legislature specific to the tasks required of the group. We appreciate group members for meeting over the past 10 months to discuss and assemble a list of recommendations that will further reduce plastic waste and create positive change in our environment. We would also like to thank our support staff and our facilitator for coordinating meetings and working with group members to create this report. Lastly, The Department of Health thanks the Legislature for the opportunity to explore potential opportunities to further reduce plastic waste.

Despite varying experiences and perspectives, the Working Group was able to reach compromises to find a balance among all members through these recommendations. The Department of Health recognizes the value that each member brought to the table to represent the Hawai‘i community in a comprehensive way. The final recommendations in this report reflect the ideas that were shaped by these members to create a vision for an implementable future for plastic waste reduction in Hawai‘i.

Although all the recommendations are considered to be crucial in creating positive changes in our community and environment, the recommendations that the Department of Health believes will have the greatest impact on the reduction of overall waste generation are the ones that specifically promote reuse or source reduction, such as the use of reusable containers over disposable containers for takeout meals at restaurants. By using reusable containers, consumers will directly reduce the demand for disposable containers and will further reduce overall waste generation instead of substituting one type of disposable container material for another.

The Department of Health recognizes the positive impact that these recommendations could have on the environment. The Department of Health also recognizes the state of our economy due to the COVID-19 pandemic. When our State economic situation allows, the Legislature must take into consideration the manpower and funding required to implement these recommendations effectively and completely when possible.

Catherine Gewecke, Aquatic Biologist
Department of Land and Natural Resources Division of Aquatic Resources

Due to the problems caused by ingestion of plastics by various organisms, and the reliance of humans on these organisms for subsistence, it's important to pursue packaging or products in themselves, that are either immediately digestible or break-down quickly into digestible material; ultimately a material that is plant-based and is able to be home-composted within normal composting periods (e.g. 12 to 24 weeks).

Ingestion of plastics by organisms in various stages of their life (larval through adult) can reduce their ability to survive, affecting future populations and other marine or terrestrial organisms that feed upon them directly at various life-stages and trophic levels, causing gastrointestinal blockages and perforations, diluting food and nutrient absorption, and exposing organisms to persistent organic pollutants (e.g. PCBs and DDT), which attach to floating pieces of plastic and travel globally through marine ecosystems.

According to two studies conducted by local research institutions in Hawaii, researchers discovered ingested plastic - mostly plastic fragments - in 50 of 55, or 90.9%, of turtles collected as bycatch in the pelagic (open sea) Pacific longline fisheries (Clukey et al., Marine Pollution Bulletin, 2017). The plastic polymers that were ingested most abundantly were polyethylene ("PE"; including low-density polyethylene: "LDPE") and polypropylene ("PP") (Jung et al., Environmental Science & Technology, 2018). Among other polymers, LDPE and PP are used to make single-use drink bottles, food packaging and bags, in addition to being used heavily in the fishing, aquaculture and shipping industry for nets, and other fish gear.

In another recent study conducted by researchers in West Hawaii, ocean surface slicks (which are important gathering areas for larval pelagic and reef fish due to their high densities of marine phytoplankton and zooplankton) are estimated to contain ≈42% of all larval fish living in ocean surface habitats along Hawai'i's coastlines, but also harbored ≈92% of all floating plastics (Gove et al., Proceedings of the National Academy of Sciences, 2019). Nearly 9% of larval fish species, including important food-fish (swordfish and mahi mahi) and other pelagic and reef fish (flying fish, trigger fish and damsel fish), were found to have ingested plastics (Gove et al., PNAS, 2019).

In order to provide effective options for alternative packaging materials in Hawaii, it would be beneficial to research the impacts of these home-compostable alternative packaging on aquatic organisms before they are able to microbially decompose (e.g. before 12 weeks).

Such research could include a pilot project which researches the ingestibility or potential ecotoxicity of home-compostable cellulose packaging films (e.g. packaging films produced by NatureFlex or other manufacturers) on aquatic organisms. NatureFlex films are approved for vermicomposting (Australian standard AS 5810 takes worm toxicity into account), however testing with aquatic life has not been done.

Verifying that these home-compostable materials can be digested if they were to enter the ecosystem before they are able to microbially decompose (from escapement during disposal process), or collecting data on the effect of the marine environment (salt water) on decomposition rates, would be beneficial in terms of Hawaii recommending effective packaging alternatives.

Kalani Kaʻanāʻanā, Director of Hawaiian Cultural Affairs and Natural Resources
Hawai'i Tourism Authority

The Hawai'i Tourism Authority (HTA) is committed to helping the state mitigate the damaging effects of plastic waste. HTA supports the United Nations 17 Sustainable Development Goals and promotes visitor industry alignment with the Aloha+ Challenge.

Regenerative tourism is now a part of HTA's branding and marketing efforts, with destination management as a major focus. HTA is guided by a natural resources pillar and is committed to supporting programs that help to protect and preserve Hawai'i's natural resources – programs that have impactful and meaningful actions. HTA allocated $2.6 million in its FY21 budget to its natural resources pillar. One of HTA's milestones in this pillar as indicated in its Strategic Plan 2020-2025 includes "initiation of efforts to track sustainable efforts of the visitor industry … (by the) reduced amount of plastic waste."

HTA continues to encourage hotels to go green in an effort to be sustainable. One of the initiatives includes challenging hotels to do away with small single-use plastic bottles that are often filled with shampoo, conditioner and body lotion. In addition, HTA encouraged hotels to do away with single-use plastic water bottles. However, the COVID-19 pandemic created some challenges in this initiative, with many of the hotels across the state shut down or only partially operating, with tourism at a near halt since the start of the 14-day mandatory quarantine at the end of March 2020.

HTA realizes the goal of a more plastics-free Hawai'i is a long-term one. It is also part of creating a sustainable environment for our future generations, and HTA remains committed to this effort. Hawai'i's number one industry needs to be the leader in the efforts to protect the land and invest in the future.

Danielle Bass, State Sustainability Coordinator
State of Hawai‘i, Office of Planning

I want to thank the Department of Health for bringing in an experienced facilitator and conflict resolution expert. This Plastic Source Reduction Working Group included representatives from government, businesses, and environmental organizations to discuss the future planning and implementation of Hawai‘i’s plastic source reduction.

I truly appreciated the Department of Health’s wisdom to incorporate a facilitator through this process. We, as a working group were able to understand each other’s perspectives, concerns, and hopes with mutual respect—especially during this global pandemic and very turbulent, challenging, and stressful economic conditions.

I am pleased with the work of this group and our ability to collaborate to find sustainable solutions. I highly recommend following this process and using an experienced facilitator and conflict resolution expert to discuss and negotiate future and potentially divisive matters that relate to the planning and coordination of Hawai‘i’s sustainable future.

Nicole Chatterson, Director
Zero Waste Oʻahu

ʻAʻohe hana nui ke alu ʻia. This ʻŌlelo Noʻeau reminds us that when we work together, no task is too big.

We have an important task in front of us— reassessing, redesigning, and rejecting the systems, policies and mindsets that have created a plastic pollution crisis. Plastic is a powerful and important material. And, we have misused this material by overproducing short-lived, single-use plastic products. The impacts of this misuse have caught up with us.

Plastic pollution is felt acutely across our Hawaiʻi. Our coastlines, waterways, and seafloors are inundated with visible and invisible pieces of deteriorating plastic. These plastics suffocate ecosystems and pollute food chains—threatening the well-being of many, including marine life, seabirds, and humans.

How did we get here? We left behind systems of reuse and durable products for the "affordability" and "convenience" of throw-away plastic. These benefits of "throw-away living" were heavily marketed to the public. Today, plastic is the fastest growing sector of the oil industry, generating $400 billion annually. The cost of cleaning up this "convenience" from our ecosystems and our bodies has yet to be so clearly quantified.

An ever-growing chorus of scientists, business owners, parents, students, and folks from every walk of life is calling for change. We now know that recycling, once promised as cure-all for the negative impacts of excessive plastic use, is not our best tool. Under 10% of the plastic ever made has been recycled. Recycling can no longer be an excuse to not reduce. So how do we start?

We stop the over-production and consumption of unnecessary single-use plastic. We judiciously keep plastic in applications where it is necessary. We innovate better materials and we check our consumption. Today, brave leaders are reminding us of what we once knew—that there are limits. That we can do more with less, and be healthy and happy. That all materials we extract from the ʻāina are precious—including plastic—so we should use them with care.

When I advocated for SB522, the bill that created this working group, it was with the hope that the State Legislature would enact laws based on the abundance of science that has demonstrated why things must change. The public voice has loudly requested our leadership to keep all stakeholders—producers and consumers alike—accountable to reduce our collective plastic footprint. We need change—for the sake of our keiki, for the sake of our ʻāina.

This working group has provided valuable conversation. Hawaiʻi (and most countries across the globe) have been in conversation about this issue for decades—it is now time to act. This report offers our legislators many ways in which that can be done. Extending the responsibility to producers to manage plastic waste they manufacture would be a powerful place to start, a concept often called "product stewardship" or "EPR".

We must rise to the challenge and change how we do things. The task is big. And, as the ʻŌlelo Noʻeau reminds us, nothing is out of our reach if we do it together.

Rafael Bergstrom, Executive Director
Sustainable Coastlines Hawai'i

Aloha Leaders of the State of Hawai'i,

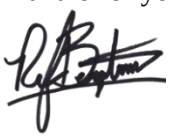
My name is Rafael Bergstrom, the Executive Director of Sustainable Coastlines Hawaii (SCH) and a member of the State's Plastic Source Reduction Working Group (PSRWG). The PSRWG spent hours collaborating and navigating differences in opinions and the unstable situation of COVID-19. Please share in appreciation for everyone who gave their time to this.

Over the past 9 years SCH has removed 550,000 lbs. of debris from our coastlines, united 40,000 volunteers, educated 42,000 students, and waded through a destructive mess of plastic pollution. We are experts on plastic pollution, the consequences of inaction, and the solutions we have at our fingertips. Our citizens produce more than double per capita plastic waste of China and five times that of Indonesia, while (with Europe), housing 95% of the companies, lobbyists, and industries in the plastic economy (WEF 2016). Hawai'i beaches are inundated with the Pacific Gyre's rapidly increasing plastic pollution (CNN 2016).

While this working group is offering you some important steps, the recommendations are nowhere near enough. As our ocean fills with more plastic by weight than fish (Washington Post 2016) by 2050, as we have seen a 610% increase in raw plastic production since 1975 (Jambeck 2015), and as **95% of plastic packaging globally (resulting in $80-120 billion annual cost) is lost after a single-first use** (WEF 2016), the solutions must be more geared towards a shift away from the fossil fuel based, greenhouse gas creating industry of plastics. The proliferation of plastic production will account for 20% of the global fossil fuel budget by 2050 (United Nations 2018). A recent study from UH Mānoa researchers, illustrates that plastics are also releasing methane as they degrade in water and sunlight.

Please read the comprehensive PEW research paper and accompanying article in the prestigious *Journal of Science* released just a month ago – the message: action to **stop plastic production** and the companies responsible for it is needed now from every form of government from local to global. Despite an overwhelming majority on the working group who wanted stronger action on **extended producer responsibility** (requiring accountability to full product life cycles and major shifts in supply chains), we were undermined by the few whose direct financial ties to the industry are very clear. Today an article was released by NPR exposing the lies and deceit in the plastic industry and their lobbying groups for more than 50 years that still proliferate today. Our State has an opportunity to decouple from this fraudulent industry and require, at minimum, a 50% reduction in plastic packaging imports. We can create new jobs in reusable containers, refilling, compost, local agriculture, and lower costs for business by getting rid of all single-use items by asking consumers to do their part and bring their own. As the PEW article suggests, this comprehensive action must start now to protect our future. Please use PSRWG recommendations as a beginning to far more comprehensive action.

Mahalo for your time,



Alexis Chapman
Hawai'i Food Industry Association

The world and our state are very different than they were when this group was created. As we all work to stay physically safe many of our residents and businesses are also struggling with overwhelming financial hardships, and food insecurity has increased exponentially in our state in the last 6 months. Since the COVID-19 pandemic began we have seen dozens of businesses closures and thousands of job losses. With no end in sight, we are faced with both the challenge of finding new ways to function right now, and the difficulty of trying to plan for a completely uncertain future.

The Hawaii Food Industry Association (HFIA) is comprised of two hundred member companies representing retailers, suppliers, producers, and distributors of food and beverage related products in the State of Hawaii. Many of our members are Essential Businesses, and all our members are job creators, economic drivers, and important parts of our communities. Our member businesses have risen to the challenges of COVID-19 in remarkable ways and we are proud to support them. Our members work hard to feed our state and have shown time and again how much they care about their customers, their communities, our islands, and our future. Many of our members are recognized as leaders in creating sustainable practices.

As we continue the work of determining the best, most responsible ways to manage waste, we encourage the state to adopt an inclusive approach. We support collaborative efforts that use scientific data and enable a range of stakeholders, including our business community to work together to find ways to improve sustainability in our state.

HFIA is committed to helping our members improve sustainability in Hawaii's food industry and to creating Hawaii focused solutions to environmental challenges. As the voice of Hawaii's food and beverage industry we are proud to represent and support those that feed our state, and we will continue to work to make sure that food is safe, healthy, accessible, and affordable for all Hawaii residents, now and in the future.

Dan Kouchi
Chamber of Commerce Hawai'i

Thank you for the opportunity to participate as a member of the Plastic Source Reduction Working Group. Like many other aspects of our day to day lives, the COVID-19 pandemic has changed the way that businesses rely on single-use plastic. With current stay-at-home orders in place, and socially distancing guidelines to abide by, every industry has been affected. For example, restaurants across the state are now relying heavily on take-out sales to keep their doors open and employees hired. To add to this already challenging time, mandates prohibiting certain plastic service ware and food containers are set to go into effect over the next two years in counties that previously did not have these in place, adding additional burdens at a time when there are heightened hygiene and health safety guidelines.

As we enter the sixth month of the pandemic, our local businesses across the state continue to face enormous financial burdens. Back in July, UHERO released a report forecasting that total employment in Hawaii would not return to pre-pandemic levels until 2029. In August, the Chamber, in partnership with UHERO and other organizations, released findings to a follow-up survey about the ongoing impacts of this pandemic. This survey found that despite the reopening of the kama'aina economy, business revenue has remained significantly depressed with nearly 20% of businesses reported having no revenue and another 20% reported earning less than half of their baseline monthly revenue in July. The survey also found that nearly 51% of businesses surveyed indicated that either additional cuts would be needed, or their business would not survive if the current quarantine orders remain in place until October 1st. Yet another delay on the reopening of trans-Pacific travel, paired with the second and then extended stay-at-home order for Oahu, could be the final nail in the coffin for many businesses barely hanging on. It's almost a daily occurrence now that we see an article or news report talking about another business that's closing for good.

While this report does provide recommendations to our legislators related to policy to address plastic waste reduction, given the reasons above, we hope that these recommendations are carefully considered. We need to ensure that any proposed policy changes are realistic for businesses to implement in a post-COVID environment.

Adrian Hong, President
Island Plastic Bags

As the representative for the plastic industry in Hawai‘i, we are grateful for the opportunity to have participated in the Plastic Source Reduction Working Group. We agree broadly with the recommendations made by the working group with an important caveat. We believe that all future legislation regarding packaging and plastics should remain material neutral. This means that one material versus another is not maligned unless there is evidence to support such a position in a particular application.

Plastics are often maligned because of its detrimental impact when it is not disposed of properly. The truth of the matter is that plastics are a vital material that provides incredible benefits for everyone. The COVID-19 pandemic proved that through the use of plastics in plexiglass barriers, masks, and other vital equipment --- it keeps us all healthy and safe. Plastics are used in transportation, construction, health, waste disposal, food manufacturing, and myriad other applications to make us more prosperous, healthier, and safer.

Another truth is there is no alternative material that is better than plastics for the environment in every lifecycle assessment category (ex. greenhouse gases, water consumption, toxicity, land occupation, etc.). The lifecycle assessments attached to the working group’s report prove that. Science, cost, and benefit analyses should be used to determine which materials are used in which applications.

No one argues the detrimental impact of improperly disposed plastic on our environment. The plastic industry in Hawai‘i humbly asks legislators when considering future environmental legislation to assess whether it solves the proposed issue and does the benefits of such legislation outweigh the costs, economically and environmentally. Thank you again for the opportunity to participate in this endeavor.

Bruce Iverson, Director of Marketing and Development
Reynolds Recycling

Aloha,

It has been an honor to work with the Act 254, Plastic Source Reduction Working Group, and join with other members passionate efforts to combat the proliferation of plastic waste in our island community. While we are from various groups: environmental, governmental, business, and recycling, we were able to come together on common ground and make recommendations that will move Hawaii forward in reducing various forms of plastic waste, and encourage other technologies, such as composting at home and regional levels, throughout the islands. I hope that the legislature will use the common sense results that were produced to assist in creating laws that will help the different stakeholders to bond together in their efforts to deal with plastic waste in the most environmentally sound and fiscally responsible ways possible.

Finding ways to encourage the utilization of other more environmentally friendly materials, the reduction of the total amounts of plastic used, and the elimination of forms and combinations of materials that will make recycling of plastics more difficult for both the public and business, are all ideas that need to be addressed. While a small island community, we have lots of great ideas towards making this work here, but need a legislative push to guarantee that the change is such that the business community can find a set of "island standards" to help with standardization amongst our different counties, and that any planned "bans" on certain materials or combinations of materials are thoughtfully phased in, and allow for adequate replacements to be made available.

Ultimately plastic is just a material, neither inherently good nor evil, but one that needs to be managed to ensure that the good it has done is not outstripped by the problems that some aspects of that same material create in the natural environment.

As a recycling company, Reynolds Recycling is always working to help keep Hawaii beautiful, and hope that we can continue to do so well into the future.

EXECUTIVE CHAMBERS
HONOLULU

DAVID Y. IGE
GOVERNOR

July 5, 2019 GOV. MSG. NO. 1356

The Honorable Ronald D. Kouchi,
President
and Members of the Senate
Thirtieth State Legislature
State Capitol, Room 409
Honolulu, Hawai'i 96813

The Honorable Scott K. Saiki,
Speaker and Members of the
House of Representatives
Thirtieth State Legislature
State Capitol, Room 431
Honolulu, Hawai'i 96813

Dear President Kouchi, Speaker Saiki, and Members of the Legislature:

This is to inform you that on July 5, 2019, the following bill was signed into law:

SB522 SD2 HD2 CD1 RELATING TO PLASTIC.
ACT 254 (19)

Sincerely,

DAVID Y. IGE
Governor, State of Hawai'i

Approved by the Governor
on JUL 05 2019
THE SENATE
THIRTIETH LEGISLATURE, 2019
STATE OF HAWAII

ACT 254
S.B. NO. 522 S.D. 2 H.D. 2 C.D. 1

A BILL FOR AN ACT

RELATING TO PLASTIC.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that the local and global impact of the world's increasing waste stream is unsustainable and detrimental to the future of Hawaii's economy and people. There has been an exponential rise in single-use foodware items over the past few decades globally, with particularly high increases in plastics derived from fossils fuels. Single-use disposable foodware and packaging - including plastic bottles, caps, lids, straws, cups, and polystyrene and plastic containers - are major contributors to street and beach litter, ocean pollution, marine and other wildlife harm, and greenhouse gas emissions.

According to the United Nations, since the 1950s, the production of plastic has outpaced that of almost every other material. Much of the plastic produced is designed to be thrown away after being used only once. As a result, plastic packaging accounts for about half of the plastic waste in the world. Most of this waste is generated in Asia, while America, Japan, and the European Union are the world's largest producers of plastic

packaging waste per capita. The world's ability to cope with plastic waste is already overwhelmed as seen by the closing of recycling markets in China and Thailand. Even when recycling markets were open, only nine per cent of the 9,000,000,000 tons of plastic produced has been recycled. Most plastic ends up in landfills, dumps, incinerators, or in the environment. If the growth in plastic production continues at its current rate, then by 2050, the plastics industry will likely account for twenty per cent of the world's total oil consumption.

Hawaii has a goal of carbon neutrality by 2045 and embraces the United Nations sustainable development goals, including achieving sustainable management and the efficient use of natural resources, sound waste management, encouraging corporate sustainability practices, strengthening the State's resilience and adaptive capacity to climate-related hazards and natural disasters, sustainably managing and protecting our marine and coastal ecosystems, and reducing pollution. Decreasing the import and use of fossil fuel-based products like single-use plastics should become part of a movement toward reaching those goals. For every one ton of waste seen at the end of life, seventy tons were created upstream in the extraction,

production, and transportation sectors. Alternatives to plastics already exist for many take-out items and an industry of innovative change for packaging is advancing globally. Zero waste plastic reduction plans are moving forward all over the world, including within the European Union, Ethiopia, Costa Rica, and municipalities across the United States. The legislature finds that given the current trend, if Hawaii businesses are at the forefront of this movement, they will be less burdened by change.

Locally, plastic litter and debris can be increasingly found on every island and in every watershed and protected area from the remote Kalalau valley on Kauai to Kilauea caldera on Hawaii island. Hawaii's forests, streams, and beaches are strewn with plastic debris, including micro plastic debris smaller than grains of sand, which are consumed by the smallest of endangered birds to the humpback whale. Among other hazards, plastic debris attracts and concentrates ambient pollutants in seawater and freshwater, which can transfer to fish, other seafood, and salt that is eventually sold for human consumption. Globally, ninety-five per cent of plastic packaging is discarded

after a single use, at a cost of $80,000,000,000 to $120,000,000,000.

The legislature further finds that cleaning up plastic is a significant cost to Hawaii taxpayers. The cost of increasing cleanups by government agencies, businesses, and the general public is rising to account for expensive best management practices and mitigation. A study of over ninety counties in California recently concluded that taxpayers are paying $428,000,000 per year to clean up plastic through storm drain management, street sweeping, and marine cleanups. San Diego county, which has an equivalent population to Hawaii at 1,300,000 people, spends $14,000,000 annually cleaning up plastic. In January 2019, San Diego county passed legislation to phase out polystyrene foam and other single-use plastics. The Hawaii department of transportation has produced a trash management plan that shows that polystyrene foam and plastic bags are the top two contributors to the waste stream and must be regularly removed from storm drains at a cost to the department.

Major news and research publications like *National Geographic* and *60 Minutes* are reporting on plastic pollution as

one of the pressing environmental issues currently facing the world. Minimizing packaging and utilizing alternatives derived from compostable materials, which are now widely available, can benefit the State's economy as it shifts toward a system of responsible conservation, recycling, recovery, and reuse, which is a foundational principle of Native Hawaiian culture. Additionally, the State's economy can become a leader in reducing and recovering plastic waste by collaboratively working with businesses, as well as researching and implementing feasible and innovative solutions for all packaging coming into the State of Hawaii.

SECTION 2. (a) There is established within the department of health for administrative purposes a plastic source reduction working group.

(b) The working group shall:

(1) Formulate a plan for reducing and recovering plastic from the Hawaii waste stream;

(2) Develop strategies to encourage plastic reduction and reuse in the food service industry, such as reusable container incentive programs for customers;

(3) Provide recommendations to encourage reuse, reduction, recycling, and recovery of waste and create value added products to innovate and responsibly manage the life cycle of existing resources;

(4) Consult with each county that has already enacted ordinances related to single-use plastics such as plastic bags and polystyrene foam containers and develop recommendations for the implementation of a uniform, statewide policy for these items that can replace existing county ordinances and provide businesses with laws that are consistent throughout the State;

(5) Consult with stakeholders to develop appropriate exemptions to address concerns of health and safety, lack of suitable alternative products on the market, and lack of infrastructure; and

(6) Evaluate potential life-cycle and environmental implications of replacing plastic packaging with alternative products.

(c) The membership of the working group shall be as follows:

(1) The director of health or the director's designee;

(2) The chairperson of the board of land and natural resources or the chairperson's designee;

(3) The president and chief executive officer of the Hawaii tourism authority or the president and chief executive officer's designee;

(4) Four members, one to be appointed by each of the respective mayors of the city and county of Honolulu and the counties of Hawaii, Kauai, and Maui;

(5) The state sustainability coordinator;

(6) A representative of the Surfrider Foundation;

(7) A representative of Zero Waste Oahu;

(8) A representative of Sustainable Coastlines Hawaii;

(9) A representative of the Hawaii Food Industry Association;

(10) A representative of the Hawaii Restaurant Association;

(11) A representative of the Chamber of Commerce Hawaii;

(12) A representative of the beverage industry;

(13) A representative from the plastic manufacturing industry; and

(14) A representative of the recycling industry.

The representatives in paragraphs (6) through (11) shall be selected by the director of health.

(d) The members of the working group shall serve without compensation but shall be reimbursed for reasonable expenses, including travel expenses, consulting fees, and administrative expenses such as photocopying, postage, stationery, and office supplies incidental to the performance of their duties.

(e) The working group shall work with the department of health, the carbon sequestration task force, private stakeholders, public stakeholders, or any other group or individuals the working group deems necessary.

(f) The working group shall submit a report of its findings and recommendations, including recommendations for pilot projects for Hawaii businesses to phase out single-use plastic packaging, promote reuse, and find sustainable alternatives for packaging, as well as any proposed legislation, to the legislature no later than twenty days prior to the convening of the regular session of 2021.

SECTION 3. The working group shall cease to exist on June 30, 2022.

SECTION 4. This Act shall take effect on July 1, 2019.

S.B. NO. 522 S.D. 2 H.D. 2 C.D. 1

APPROVED this 05 day of JUL , 2019

GOVERNOR OF THE STATE OF HAWAII

THE SENATE OF THE STATE OF HAWAI'I

Date: April 30, 2019
Honolulu, Hawaii 96813

We hereby certify that the foregoing Bill this day passed Final Reading in the Senate of the Thirtieth Legislature of the State of Hawai'i, Regular Session of 2019.

President of the Senate

Clerk of the Senate

SB No. 522, SD 2, HD 2, CD 1

THE HOUSE OF REPRESENTATIVES OF THE STATE OF HAWAII

Date: April 30, 2019
Honolulu, Hawaii

We hereby certify that the above-referenced Bill on this day passed Final Reading in the House of Representatives of the Thirtieth Legislature of the State of Hawaii, Regular Session of 2019.

Scott K. Saiki
Speaker
House of Representatives

Brian L. Takeshita
Chief Clerk
House of Representatives

Appendix B

Meeting No.	Date	Link to meeting materials
1	November 14, 2019	Agenda Board Packet Welcome Messages Written Summary & Audio Recording
2	January 9, 2020	Agenda Board Packet Written Summary & Audio Recording
3	May 21, 2020	Agenda & Board Packet Revised Agenda Written Summary & Audio Recording
4	June 18, 2020	Agenda & Board Packet Written Summary & Audio Recording
5	August 13, 2020	Agenda Board Packet-Attachment A Board Packet-Attachment B Written Summary & Audio Recording
6	September 3, 2020	Agenda Board Packet-Attachment A
7	September 24, 2020	Agenda Board Packet Written Summary & Audio Recording

FINAL

Charter of Commitments

Plastic Source Reduction Working Group

I. Purpose.

This document describes the purpose and procedures of the Plastics Source Reduction Working Group ("WG"). The Charter serves as a "Terms of Reference" document and is intended to help us meet our aspirations and schedule and engage in disciplined and productive discussions. It is flexible and can be amended, modified, or abandoned by a simple majority of WG signatories.

II. Mission.

As mandated by Act 254 and expanded and clarified by the WG, and enabled by the Department of Health's Solid and Hazardous Waste Branch ("SHWB"), the WG brings together representative stakeholder groups to:

1. Formulate a plan for reducing and recovering plastic from the Hawaii waste stream;

2. Develop strategies to encourage plastic reduction and reuse in the food service industry, such as reusable container incentive programs for customers;

3. Provide recommendations to encourage reuse, reduction, recycling, and recovery of waste and create value added products to innovate and responsibly manage the life cycle of existing resources;

4. Consult with each county that has already enacted ordinances related to single-use plastics such as plastic bags and polystyrene foam containers and develop recommendations for the implementation of a uniform, statewide policy for these items that can replace existing county ordinances and provide businesses with laws that are consistent throughout the State;

5. Consult with stakeholders to develop appropriate exemptions to address concerns of health and safety, lack of suitable alternative products on the market, and lack of infrastructure;

6. Evaluate potential life-cycle, fiscal, functionality, and environmental implications of replacing plastics with alternative products; and

7. Submit a report of its findings and recommendations, including recommendations for pilot projects for Hawaii businesses to phase out single-use plastic packaging, promote reuse, and find sustainable alternatives for packaging, as well as any proposed legislation, to the legislature no later than twenty days prior to the convening of the regular session of 2021.

III. Membership.

Representative stakeholder interest groups were identified in Act 254 and invited to be represented. Members of the WG are the signatories at the end of this document.

IV. Organization and Coordination.

The WG will be logistically managed by SHWB staff and facilitated by Peter S. Adler, PhD and Layla Kilolu of The *ACCORD3.0 Network* (www.accord3.com). Substantive representation and participation at the table for DOH will be handled by others.

The job of the SHWB staff and the ACCORD facilitation team is to help the WG address the tasks requested in Act 254 and come to the highest possible consensus on recommendations to the Legislature. The SHWB staff and facilitation team will help the WG prepare for meetings, identify and prioritize critical issues, and organize working materials, so that the WG's purposes are accomplished and summarized in a final report.

More specifically, the team can be expected to:

1. Ensure that a reasonably diverse range of knowledgeable perspectives is brought to bear on discussions.

2. Ensure that no single group or person is allowed to hijack or dominate discussions or to disadvantage the expression of other perspectives.

3. Encourage all members of the WG to articulate their questions, concerns, and suggestions to inform a thorough and defensible effort.

4. Remain impartial on the substance of the issues being discussed while proactively ensuring that all WG members collectively prioritize which issues are most important to discuss and resolve.

5. Ensure that members of the WG understand that they cannot use Adler, Kilolu, and the SHWB staff to advance any pro- or con- advocacy agendas.

6. Encourage members of the WG to work together, build and maintain cohesion, and work towards the highest levels of congruent, fact-informed conclusions that can be achieved.

7. Encourage the fullest disclosure and exchange of information vital to accomplishing the WG's goals.

V. Spirit of the Process.

For WG Members, this is a collaborative and non-adversarial process to address challenging issues. It will not pit one orientation or faction against others. Instead, it will involve mutual inquiry and collective dialogue where each member is guided by the following principles:

- We will be rigorous and tough on the problems;

- We will be easy and collegial with each other;

- We will stay focused on the best data and evidence available understanding that much data remains incomplete or not yet available; and

- We are willing to modify personal and collective views when the cumulative evidence points in a different direction than you thought.

By signing this Charter, we commit to these principles of interaction.

VI. Rules of the Road.

1. **KNOWLEDGE**. WG members have been invited for their diverse types of knowledge, experience, and expertise in areas related to plastics. All members are willing to exercise their expertise and work collaboratively with others.

2. **VOLUNTEERS**. All members of the WG serve as volunteers and commit to serve for an expected six meetings in 2019 and 2020. Homework between meetings is expected.

3. **COLLABORATION**. The WG is a cooperative and, to the extent possible, evidence-based inquiry. This means that each member is willing to work with others they may disagree with towards the common goal of answering the questions it was formed to address. This requires substantive, procedural, and social introspection and a willingness to assume good intentions when disagreement arises.

4. **CIVILITY**. Candor is prized along with the courtesies and etiquettes conducive to high quality deliberation. This means sharing airtime; not monopolizing discussions; focusing on factual information; listening to others; remaining patient; and staying on topic.

5. **WILLINGNESS TO ASSUME RESPONSIBILITIES**. Members of the WG may be asked to present materials, recruit speakers, research issues, help draft sections of a final report, or perform other tasks for the project. While every effort will be made to distribute workloads and respect individual members' availabilities, the success of the effort depends on all members having their oars in the water. All members so agree.

6. **ALTERNATES**. While every effort will be made to schedule briefings and meetings at a time convenient to most members, continuity of learning will be important. It is understood that WG members may have to miss a meeting or two and may send an alternate. Each member agrees to keep alternates up to speed and ready to function as full members in their absence. Alternates will be expected to inform the standing member of that meeting's discussions so that the member will be fully prepared for the next meeting.

7. **BETWEEN MEETINGS**. As needed, the WG may organize Permitted Interaction Groups ("PIGs") in which the WG may designate two or more board members, but less than the number of members that would constitute a quorum, to tackle specific

tasks between meetings and report back to the full WG.

8. **LOCALE**. All WG meetings will be held on Oahu. Travel for Neighbor Island members will be procured by SHWB staff.

9. **OPEN MEETINGS**. The WG's meetings will be noticed and conducted pursuant to HRS Chapter 92. Observers and attending members of the public will be offered time for brief comments at the end of each meeting.

10. **DOCUMENTATION**. A court reporter may serve as the project's official documentarian. A website for meeting minutes and other documents will be established.

11. **PUBLIC COMMENT.** WG members and the Project Team agree to withhold public comments on social media and other personal evaluations of other members and their views and positions until the project is completed. This means not blogging. However, it is understood that WG members will need to keep their own constituencies informed of the issues and options under consideration.

12. **PUBLIC STATEMENTS**. No member of the WG will speak on behalf of the WG except facilitator Peter Adler. Adler will not characterize the substance of the deliberations other than to describe progress with the process.

13. **FACILITATOR INDEPENDENCE AND NEUTRALITY**. Peter Adler and Layla Kilolu of *The ACCORD3.0 Network* commit to remaining independent and neutral on the issue of plastic source reduction. The work of coming to substantive conclusions rests entirely on the WG. Adler and Kilolu will adhere to the guidelines for mediators promulgated by "Mediation Rules, Procedures & Protocol Of Dispute Prevention & Resolution, Inc." and the mediator guidelines of the State of Hawai'i Judiciary.[1]

14. **FINAL REPORT**. The discussions of the WG will build on each other and all members agree to keep up and stay informed. No decisions will be final until votes have been taken at Meeting #6. Each member of the WG who wishes will be afforded the opportunity to write a personal concluding statement regarding the process and the decisions and recommendations made. Personal statements will be limited to a

1. [1] https://dprhawaii.com/dpr-rules/) and https://www.courts.state.hi.us/services/alternative_dispute/selecting/guidelines/introduction

maximum 1,500-word count and will be made available as an annex to the Final Report.

15. **DATA.** All WG members are encouraged to bring relevant social, economic, and environmental data and pertinent empirical studies to the table. The purpose of bringing data to the WG is to help accumulate a body of evidence that informs the topic of plastic source reduction in Hawai‘i. From high to low, the WG will afford credibility and weight to:

    - Meta Studies
    - Individual peer reviewed studies from reputable journals
    - *PLOS ONE* studies in which editors have evaluated research on the basis of scientific validity, rigorous methodology, and high ethical standards.
    - Unpublished but publicly available data sets
    - Other information and data

16. **MUTABILITY**. These rules are intended to be implemented with flexibility and may be expanded or changed by the WG by a majority votes.

VII. Decision Making.

There will be numerous smaller and larger decisions to be made by the WG. Procedural decisions may range from the locations, dates and times of meetings to matters of research and the formation of task-specific PIGs. Substantive decisions may range from the priority of issues to be discussed and recommendations as to future studies and methodologies that should be provided to relevant decision makers following the life of the WG.

Wherever possible, the WG will operate by the highest consensus possible. Full consensus decisions are those everyone in the WG can support, or at a minimum, for which there is “no objection.” The Facilitators may call for straw votes of those voting members who are present, which will be recorded. However, all final and concluding decisions will be deferred until Meeting #6 with all WG members present. Nothing will be considered “final” until a bundle of recommendations has been voted on.

VIII. Schedule.

With flexibility, and subject to revisions, the WG will meet for six meetings at dates and times to be established commencing on November 14, 2019.

IX. Inquiries.

Inquiries about the project and the process may be directed to: Peter S. Adler, PhD at padleraccord@gmail.com. Adler can also be reached at 808-888-0215.

Signatures	*Date*	*Organization*
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Catherine Gewecke	1/9/2020	**Department of Land & Natural Resources**
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Signatures	*Date*	*Organization*
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David Thorp	1/9/2020	**American Beverage Association**
Adrian Hong	1/9/20	**Island Plastic Bags, Inc.**
Bruce Iverson	1/9/2020	**Reynolds Recycling, Inc.**

Plastic Bag Bans Comparison Chart

County	Ordinance	Type of goods	Fee	Thick Plastic Bags Defined Reusable	Non-Recyclable Paper Bags	Recyclable Paper Bags	Reusable Bags	Compostable/ Biodegradable Bags
City & County of Honolulu	Ordinance 17-37	Groceries and Merchandise	Mandatory $0.15			40% Post-consumer; Must display "Reusable" &"Recyclable"	x	
		Prepared Foods, Beverages and Bakery Goods	Optional		x			
County of Hawai'i	Ordinance 12-1		No	Yes, by rule, minimum of 3 mils		No post-consumer requirement		
County of Maui	Ordinance 3587		Optional	Yes, by rule, minimum of 3 mils		40% Post-consumer; Must display "Reusable" &"Recyclable"	x	
County of Kaua'i	Ordinance 885		Optional			40% Post-consumer; Must display "Reusable" &"Recyclable"	x	x

Prohibitions

County	Prohibitions
City & County of Honolulu Ordinance No. 17-37	(a) Except as provided in subsections (b) and (c), businesses shall be prohibited from providing plastic checkout bags and non-recyclable paper bags to their customers at the point of sale for the purpose of transporting groceries or other merchandise. (b) Businesses may provide, at the point of sale, reusable bags, compostable plastic bags, or recyclable paper bags to customers for the purpose of transporting groceries or other merchandise provided that they charge the customer a minimum of 15 cents per bag. (c) Nothing in this article shall be interpreted as prohibiting businesses from providing non-recyclable paper bags, with or without charge, to protect or transport prepared foods, beverages, or bakery goods. (d) After January 1, 2020, compostable plastic bags shall no longer be provided at the point of sale for the purpose of transporting groceries or other merchandise.
City & County of Honolulu Ordinance No. 19-30	Updated definitions for plastic, plastic checkout bag, and plastic film bag.
County of Hawai'i Ordinance No. 12-1	Businesses shall not provide plastic checkout bags to their customers.
County of Maui Ordinance No. 3587	(a) Businesses are prohibited from providing plastic bags to their customers at the point of sale for the purpose of transporting groceries or other goods. (b) Nothing in this chapter shall preclude a business from making reusable bags or recyclable paper bags available for sale or without charge to customers at the point of sale for the purpose of transporting groceries or other goods.
County of Kaua'i Ordinance No. 885	(a) All retail establishments shall provide only the following as checkout bags to customers: recyclable paper bags, biodegradable bags and/or reusable bags. (b) Nothing in this ordinance shall preclude any retail establishment from offering checkout bags for sale to customers.

Definitions

Biodegradable bag

County of Kauaʻi **Ordinance No. 885**	means a bag that: (1) contains no polymers derived from fossil fuels; and (2) is intended for single use and will decompose in a natural setting at a rate comparable to other biodegradable materials such as paper, leaves, and food waste. The Department of Public Works shall promulgate rules identifying bags meeting this definition. These rules shall also set forth an application process whereby a retail establishment can obtain determination whether a bag is a biodegradable bag.

Checkout bag

County of Kauaʻi **Ordinance No. 885**	means a bag that: (1) contains no polymers derived from fossil fuels; and (2) is intended for single use and will decompose in a natural setting at a rate comparable to other biodegradable materials such as paper, leaves, and food waste. The Department of Public Works shall promulgate rules identifying bags meeting this definition. These rules shall also set forth an application process whereby a retail establishment can obtain determination whether a bag is a biodegradable bag.

Plastic:

City & County of Honolulu **Ordinance No. 19-30**	means any material made of fossil fuel-derived or petrochemical polymeric compounds and additives that can be shaped by flow.

Plastic bag

County of Maui **Ordinance No. 3587**	means a bag that is made from noncompostable plastic or compostable plastic, and is not specifically designed and manufactured for multiple re-use.

Plastic checkout bag

County of Hawai'i **Ordinance No. 12-1**	means a carryout bag that is provided by a business to a customer for the purpose of transporting groceries or other retail goods, and that is made from non - compostable or compostable plastic and not specifically designed and manufactured for multiple re -use.
City & County of Honolulu **Ordinance No. 19-30**	"Plastic checkout bag": (1) Means a carryout bag that is provided by a business to a customer for the purpose of transporting groceries, prepared food, or other retail goods, and is made from plastic and not specifically designed and manufactured for long-term re-use; (2) This term does not include: (A) Handle-less plastic bags used by customers inside a business to package loose items, such as bakery goods, fruits, vegetables, nuts, ground coffee, grains, candies, or small hardware items; (B) Handle-less plastic bags used to contain or wrap frozen foods, meat or fish, flowers or potted plants, or other items to contain dampness; (C) Newspaper bags for home newspaper delivery (D) Laundry, dry cleaning, or garment bags (E) Bags sold in packages containing multiple bags intended for use as garbage, pet waste, or yard waste bags; (F) Bags used to contain live animals, such as fish or insects sold in pet stores; or (G) Bags used to transport chemical pesticides, drain-cleaning chemicals, or other caustic chemicals sold at the retail level; provided that this exemption shall be limited to one bag per customer."

Plastic film bag

City & County of Honolulu **Ordinance No. 19-30**	(1) Means a plastic bag made out of thin flexible sheets of plastic with a thickness of 10 mils or less; (2) This term does not include (H) Handle-less plastic bags used by customers inside a business to package loose items, such as bakery goods, fruits, vegetables, nuts, ground coffee, grains, candies, or small hardware items; (I) Handle-less plastic bags used to contain or wrap frozen foods, meat or fish, flowers or potted plants, or other items to contain dampness;

	(J) Newspaper bags for home newspaper delivery (K) Laundry, dry cleaning, or garment bags (L) Bags sold in packages containing multiple bags intended for use as garbage, pet waste, or yard waste bags; (M) Bags used to contain live animals, such as fish or insects sold in pet stores; or (N) Bags used to transport chemical pesticides, drain-cleaning chemicals, or other caustic chemicals sold at the retail level; provided that this exemption shall be limited to one bag per customer."

Recyclable paper bag

County of Maui **Ordinance No. 3587**	means a paper bag that: (1) is one hundred percent recyclable, (2) contains a minimum of forty percent post-consumer recycled content, and (3) displays the words "Reusable" and "Recyclable" in a highly visible manner on the outside of the bags.
County of Kauaʻi **Ordinance No. 885**	means a bag that meets all the following requirements: (1) contains no old growth fiber; (2) is one hundred percent (100%) recyclable overall and contains a minimum of forty percent (40%) post-consumer recycled content; and (3) displays the words "Reusable" and "Recyclable" in a highly visible manner on the outside of the bag.

Reusable bag

City & County of Honolulu **Ordinance No. 17-37**	means a bag with handles that is specifically designed and manufactured for multiple reuse and is made of: (1) cloth or other washable fabric; or (2) durable material suitable for reuse, including plastic that is at least 2.25 mils thick. After January 1, 2020, plastic film bags shall no longer be considered to be "reusable bags."
County of Hawaiʻi **Ordinance No. 12-1**	means a bag that is specifically designed and manufactured for multiple re -use and is (1) made of cloth or other machine washable fabric or (2) made of paper specifically designed for multiple and long-term use.
County of Maui **Ordinance No. 3587**	means a bag that is specifically designed and manufactured for multiple re-use and is (1) made of cloth or other washable fabric, or (2) made of durable material suitable for reuse.
County of Kauaʻi **Ordinance No. 885**	means a bag with handles that is specifically designed and manufactured for multiple reuse and is made of cloth or other machine washable fabric and/or is made of a durable material at least 2.25 millimeters thick and suitable for reuse.

Food Ware Bans Comparison Chart

	Effective date	Prohibits the sale of EPS within County	Prohibits sale of plastic food ware within County	Prohibits sale of plastic service ware within County	Plastic straws, stirrers prohibited	Requirements for alternatives	Defines compostable, biodegradable	Penalties	Disposable plastics prohibited	Customer opt in disposable non-plastic
City & County of Honolulu Ord. 19-30	1/1/2022 (a) and (c) 1/1/2021 (b)	Yes (a) 1/1/2022	Yes (c) 1/1/2022	Yes (b) 1/1/2021	Yes	No	No	Food vendor or business 1st -warning 2nd -$100 to $1,000 per day		Yes; for service ware "upon the request or affirmative response"
County of Hawai'i Ord. 17-63	7/1/2019	No	No	No	No	Yes; recyclable or compostable	Yes	Food vendor 1st - $10 2nd - $50 3rd - $200		
County of Maui Ord. 4457 (amended by Ord. 5084)	12/31/2018	Yes	No	No	No	No	Yes	Civil penalties and enforcement procedures of section 19.530.030		
County of Maui Ord. 5084	1/1/2022	Yes	Yes	Yes; "must not sell, use, provide or offer"	Yes; "utensils" as defined	No	Yes; Compostable	Civil penalties and enforcement procedures of section 19.530.030		Yes; for utensils "upon the request or affirmative response"
County of Kaua'i (Proposed Bill 2775)	1/1/2021	Yes	No	No	No	No	Yes	Food Providers 1st - $250 2nd - $500 3rd - $1,000		

Exemptions

✓= ok to sell, use, provide these items made of plastic in general or for the specified situations below.

	Packaging for raw meat, poultry, seafood, unprepared produce, eggs	Prepackaged food, shelf-stable food	Undue hardship (application for exemption)	No reasonable alternatives	Emergency	PS ice coolers/ice chests	Plastic straws, stirrers	Plastic utensils (forks, knives, etc.)
City & County of Honolulu Ord. 19-30	✓	✓	✓ *1 term: 2 years, ext. additional 2 years	✓ *1 term: 2 years, ext. additional 2 years	✓	✓	Only allowed for medical/physical needs.*	
County of Hawai'i Ord. 17-63	✓	✓	✓ *180 days	✓	✓	✓	✓	✓
County of Maui Ord. 4457	✓		✓	✓	✓	✓	✓	✓
County of Maui Ord. 5084	✓	✓	✓	✓ *application for exemption	✓		Only upon request for persons with disabilities. **	
County of Kaua'i (Proposed Bill 2775)	✓	✓		✓ *application for exemption	✓	Not directly addressed	Not directly addressed	Not directly addressed

*Entities exempt from compliance with the restriction of disposable plastic straws: hospitals, nursing facilities, assisted living facilities, adult residential care homes, hospice service agencies, hospice homes, home health agencies, home care agencies as defined in HAR.

**Entities exempt from compliance with the prohibition on use of plastic straws: hospitals, nursing facilities, assisted living facilities, adult residential care homes, hospice service agencies or homes, home health agencies, and home care agencies.

Prohibitions for City or County

City or County facilities:	
City & County of Honolulu Ord. 19-30	Unless exempted under Section 41-27.3, polystyrene foam food ware shall not be sold or provided, or offered for sale or use at any city facility, city authorized concession, city-sponsored or city-permitted event, or city program.
County of Hawai'i Ord. 17-63	As of July 1, 2019, all county facility users shall use a suitable recyclable or compostable product for disposable food service ware.
County of Maui Ord. 4457	Polystyrene foam food service containers shall not be sold used provided or offered for use at any County facility, County authorized concession County-sponsored or County-permitted event or County program. Also see Maui County Code Chapter 20.26 amended by Ord. 5084 to include plastic disposable foodware
County of Maui Ord. 5084	Plastic disposable foodware will not be sold, used, provided, or offered for use at any County facility, County-authorized concession, County-sponsored or County-permitted event, or County program.

Definitions

Disposable food service ware:

County of Hawai'i Ord. 17-63	means disposable food containers that are commonly disposed of after a single use, that are used, or are intended to be used, to serve or transport prepared, ready-to- consume food or beverages. This includes, but is not limited to, cups, bowls, plates, or clamshell containers that are provided by a food vendor for takeout foods and beverages and/or leftovers from partially consumed meals. For the purpose of this article, "disposable food service ware" excludes straws, cup lids, utensils, food-related bags and wrappers, packaging for unprepared food, and pre-packaged or pre-sealed items such as bread, cookies, milk, juice, snacks, candy, nuts, fruits, vegetables or other items typically sold in a grocery store or a food manufacturer's retail location.
County of Maui Ord. 5084	means "foodware" including "food service containers and utensils" that are "designed to be discarded after a single or limited number of uses and not designed or manufactured for long-term multiple re-use."

Food provider:

County of Maui Ord. 5084	means any entity or person providing prepared food for consumption within the County, including any store, shop, sales outlet, restaurant, bar, pub, coffee shop, cafeteria, caterer, convenience store, liquor store, grocery store, supermarket, delicatessen, food truck, catering vehicle or cart, or roadside stand.
County of Maui Ord. 4457	means any entity or person providing prepared food for consumption within the County, including any store, shop, sales outlet, restaurant, bar, pub, coffee shop, cafeteria, caterer, convenience store, liquor store, grocery store, supermarket, delicatessen, food truck, catering vehicle or cart, or roadside stand.

Food service container:

County of Maui Ord. 4457	means all plates, trays, cups, bowls, cartons, and hinged or lidded containers (clamshells) on or in which any foods or beverages are placed or packaged or intended to be placed or packaged and designed for one time use.
County of Maui Ord. 5084	means all plates, trays, cups, bowls, cartons, and hinged or lidded containers (clamshells) on or in which any foods or beverages are placed or packaged or intended to be placed or packaged.

Food service ware:

County of Hawai'i Ord. 17-63	includes plates, bowls, cups, lids, straws, stirrers, forks, spoons, knives, napkins, trays, and other items primarily designed for use in consuming food.

Food vendor:

City & County of Honolulu Ord. 19-30	means any entity or person selling or providing prepared food for consumption within the City and County of Honolulu, including any store, shop, sales outlet, pharmacy, restaurant, bar, pub, coffee shop, cafeteria, caterer, convenience store, liquor store, grocery store, supermarket, delicatessen, food truck, catering vehicle or cart, roadside stand, or other establishment that sells or provides prepared food for consumption within the city.
Hawai'i Ord. 17-63	means any retail food establishment

Foodware:

County of Maui Ord. 5084	means food service containers and utensils.

Plastic:

City & County of Honolulu Ord. 19-30	means any material made of fossil fuel-derived or petrochemical polymeric compounds and additives that can be shaped by flow.
County of Maui Ord. 5084	means any material made, in whole or in part, from petroleum or petrochemical compounds, including so-called biodegradable products, where any portion is not compostable. "Plastic" also means all forms of polystyrene, polyethylene, polypropylene, and polycarbonate, or petrochemical polymeric compounds and additives that can be shaped by flow.

Plastic food ware:

City & County of Honolulu Ord. 19-30	means hot and cold beverage cups, cup lids, plates, bowls, bowl lids, "clamshells," trays, or other hinged or lidded containers that contain plastic. The term does not include disposable plastic condiment packets;

	food-related bags or wrappers, including, but not limited to, musubi wraps, plastic film, poi bags, chip bags, cracker and cookie wrappers, bread bags, meal kits, or ice bags; beverage-related bottles or cartons; non-plastic cups that contain a polyethylene or plastic coating; packaging for unprepared food; and packaging for wholesale distribution of prepared food, baked goods or dairy products.

Polystyrene foam food ware:

City & County of Honolulu Ord. 19-30	means hot and cold beverage cups, cup lids, plates, bowls, bowl lids, "clamshells," trays, or other hinged or lidded containers, that are made of polystyrene foam; but the term does not include polystyrene foam coolers and ice chests specifically designed and manufactured for multiple re-use; and soup or noodles packaged with polystyrene foam that has been filled and sealed prior to receipt by the food vendor.

Service ware:

City & County of Honolulu Ord. 19-30	means any stirrers, straws, baran, and utensils including forks, spoons, sporks, and knives; but the term does not include items contained within or attached to packaging of food or beverages, including, but not limited to, disposable plastic straws pre-packaged and sold with beverage boxes, or disposable plastic utensils pre-packaged and sold with ice cream or salads.

Utensils:

County of Maui Ord. 5084	means implements used in the consumption of food or drink, such as forks, knives, spoons, straws, coffee stirrers, cocktail picks, and chopsticks, excluding those contained within or attached to prepackaged food.

Appendix F

Life Cycle and Environmental Implications for Plastic Alternatives Studies

Generally, there is a growing number of studies that compare the life cycle and environmental implications of plastic bags and their respective alternatives. However, the results of each study must be carefully examined due to differences in variables assessed in each study (i.e. demographic information, environmental factors).

Source Information	Topic	Key Findings
Title: Marine Debris Polymers on Main Hawaiian Island Beaches, Sea Surface, and Seafloor Author/Organization: Kayla Brignac, et. al.	Marine litter	• Polymeric differences of plastic debris were assessed across four compartments of the Main Hawaiian Islands (sea surface, windward beaches, leeward beaches, and seafloor) to better describe sources and fate. • Plastic debris pieces (*n* = 4671) were collected from 11 beaches, three sea surface tows, and three seafloor dives. Windward beaches had 1-2 orders of magnitude more plastic pollution (g/m^2) than leeward beaches, despite smaller human populations on windward sides. • Sea surface and windward beaches were dominated by severely weathered, less dense floating polymers (polyethylene and polypropylene comprised 92.7 and 93.5% on average, respectively, of the total debris mass), while leeward beaches and the seafloor debris consisted of less weathered and more dense sinking polymers (e.g., 41.0 and 44.7% of total mass consisted of the sum of polystyrene, nylon, cellulose acetate, polyethylene terephthalate, and additive-masked debris). • These results are some of the first to provide evidence of polymeric stratification in the marine environment and emphasize that the majority of marine debris in Hawai'i is floating in from distant sources rather than from Hawai'i's residents or tourists.
Title: A Brief Analysis of Life Cycle Analyses (LCAs) and the Impacts of Plastic vs. Paper Bags Author/Organization: Californians Against Waste	Paper vs. plastic bags; analyses of LCAs	• Many of the existing LCAs for single-use bags have been funded by the plastics industry. • Estimates from the LCAs are often based on different assumptions due to the varying geographical locations of where they were written. • Closer analysis of reports with incorrect assumptions reveals that paper carryout bags have a reduced impact compared to plastic carryout bags particularly regarding solid waste impact and […] greenhouse gas emissions. • Paper bags are recycled at higher rates than plastic bags, will eventually biodegrade, and have a higher carrying capacity. These factors would help decrease the amount of solid waste generated despite an increase in paper bag usage. • Updated numbers from the EPA in 2009 showed that the paper bag recycling rate has increased considerably to nearly 50%, while the HDPE plastic bag recycling rate stayed constant at 6.1%.

Title: Literature Review and Inventory: Greenhouse Gas Impacts of Disposable vs. Reusable Foodservice Products
 	
Author/Organization: Clean Water Fund
	Hot/cold cups, water bottles, and other reusable foodservice items (plates, bowls, clamshells, utensils)	• Hot/cold cups:
		  ○ Energy/GHG footprint of cups is one of the most studied, however, results vary widely
		  ○ Improvements in dishwashing energy efficiency and the electrical grid suggest that reusable cups have lower impacts than disposable cups in many situations
		  ○ Using bioplastic foodware (like PLA) does not yield greenhouse gas reduction benefits if it is landfilled
		• Water bottles:
		  ○ Reuse is superior to recycling. A detailed study of drinking water delivery options showed that washing reusable water containers (glasses and bottles) has fa lower global warming potential impacts than recycling single-use water bottles.
		• Clamshells/plate/bowls/flatware
		  ○ LCAs of single-use versus reusable of these items have been less detailed than those for cups and water systems.
		  ○ Generally, these LCAs show low "break-even points", which is the usage required for reusables to have lower overall greenhouse emissions/energy usage than single-use products

Source Information	Topic	Key Findings
Title: Life Cycle Assessment of Grocery Bags Author/Organization: Clemson University	Comparing types of grocery bags	• Reusable LDPE and NWPP bags have lower average impact on the environment than [plastic retail bags] PRBs if reused a "sufficient" number of times. Quantitatively, what "sufficient" is will be determined by which environmental impact categories are important to the decision-maker. • For either PRBs or Paper bags, higher recycle content results, on average, in lower environmental impacts, but these differences are much smaller than the differences among the various types of bags. • The data in the present study, in which the entire Life Cycles of both Paper bags and PRBs have been examined, show that Paper bags are more detrimental to the environment in ten of the twelve environmental impact categories studied and, on average, are 4 to 7.5 times more detrimental to the environment vs. PRBs.
Title: Investigation of plastic debris ingestion by four species of sea turtles collected as bycatch in pelagic Pacific longline fisheries Author/Organization: Katharine Clukey, et. al.	Marine litter	• Ingestion of marine debris is an established threat to sea turtles. • The amount, type, color, and location of ingested plastics in the gastrointestinal tracts of 55 sea turtles from Pacific longline fisheries from 2012 to 2016 were quantified and compared across species, turtle length, body condition, sex, capture location, season and year. • Six approaches for quantifying amounts of ingested plastic strongly correlated with one another and included: number of pieces, mass, volume and surface area of plastics, ratio of plastic mass to body mass, and percentage of the mass of gut contents consisting of plastic. • All olive ridley (n =37), 90% of green (n =10), 80% of loggerhead (n =5) and 0% of leatherback (n = 3) turtles had ingested plastic; green turtles ingested significantly more than olive ridleys.
Title: Prey-size plastics are invading larval fish nurseries Author/Organization: Jamison Gove, et. al.	Marine litter	• This study demonstrated that surface slicks, meandering lines of convergence on the ocean surface, are important larval fish nurseries that disproportionately accumulate non-nutritious, toxin-laden prey-size plastics. • Plastic pieces were found in numerous larval fish taxa at a time when nutrition is critical for survival. • Surface slicks are a ubiquitous coastal ocean feature, suggesting that plastic accumulation in these larval fish nurseries could have far reaching ecological and socioeconomic impacts.
Title: Polymer Identification of Plastic Debris Ingested by Pelagic-Phase Sea Turtles in the Central Pacific Author/Organization: Melissa Jung, et. al.	Marine litter	• Pelagic Pacific sea turtles eat relatively large quantities of plastic (median 5 g in gut). • This study identified the polymers ingested by 37 olive ridley, 9 green, and 4 loggerhead turtles caught as bycatch in Hawai'i-and American Samoa-based longline fisheries. • Regardless of species differences in dive depths and foraging strategies, ingested plastics were primarily low-density, floating polymers (51% low-density polyethylene (LDPE), 26% polypropylene (PP), 10% unknown polyethylene (PE), and 5% high-density PE collectively). • Albeit not statistically significant, deeper diving and deeper captured olive ridley turtles ate proportionally more plastics expected to sink (3.9%) than intermediate-diving green (1.2%) and shallow-diving loggerhead (0.3%) turtles. • Spatial, but no sex, size, year, or hook depth differences were observed in polymer composition. • LDPE and PP, some of the most produced and least recycled polymers worldwide, account for the largest percentage of plastic eaten by sea turtles in this region. • These novel data inform managers about the threat of plastic ingestion to sea turtles and may motivate development of more environmentally friendly practices for plastic production, use, and waste management.

Source Information	Topic	Key Findings

Title: Material Attribute: COMPOSTABLE – How well does it predict the life cycle environmental impacts of packaging and food service ware?
 	
Author/Organization: Oregon Department of Environmental Quality
	Compostable packaging	• Many businesses, governments and individuals are designing or purchasing packaging and food service ware to be compostable as a means to reduce environmental impacts and conserve resources. But research suggests that compostability is a poor indicator for determining the environmental benefits – and burdens – of packaging and food service ware items.
		• Composting – the act of recovering nutrients from materials such as food and yard debris – is oftentimes beneficial when compared against its alternatives (such as landfilling). However, compostable packaging and food service ware introduces a broader set of trade-offs, including the raw materials used to make compostable feedstocks and the environmental impacts of those upstream processes.
		• DEQ reviewed literature from the last 18 years of environmental life cycle assessments that included compostable packaging and food service ware. Over 1,200 comparisons involving compostable packaging and over 360 comparisons for food service ware were found. In the majority of these comparisons, making and using compostable materials (and composting them) was found to result in higher environmental impacts than either using non-compostable materials, or using compostable materials and treating them via recycling, landfilling or incineration. One primary reason for this is the potential for higher burdens associated with producing the feedstocks used to make different types of compostable packaging. Another is that composting, unlike other end-of-life waste management alternatives such as recycling, is a relatively poor method of recovering nutrients or value embedded in human-made materials such as packaging.
		• There are a number of additional concerns with compostable packaging and food service ware, including:
		  ○ Not all certified compostable packaging fully composts in all compost facilities due to operational variations. Some compostable packaging may burden compost facility operators with higher costs and generate finished compost product that is contaminated with pieces of uncomposted waste.
		  ○ The acceptance of compostable packaging may increase contamination from “look-alike” materials that further pollute compost, soils and waterways.
		  ○ Some paper based compostable food service ware is treated with toxic materials such as perfluorinated compounds that are known to accumulate in body tissues and the larger environment.
		  ○ Further, most compostable plastic packaging does not degrade in marine environments.
		• As such, DEQ recommends against using compostability as a blanket design or procurement criteria. Rather than using this attribute, producers and purchasers should instead use life cycle assessment as part of a more holistic evaluation of environmental impacts. Packaging design should be optimized by prioritizing the use of materials with the lowest life cycle impact profile, then considering the viable end of-life fates to optimize recovery of those materials. Research suggests recycling to be a better outlet for packaging once it is optimized for life cycle impacts.
		• For businesses that want to advance the use of compostable packaging, the focus needs to shift to using materials that have lower environmental impacts, and that don’t inadvertently contaminate finished compost product and undermine the economic sustainability – and environmental benefits – of the compost industry.

Title: Hawai‘i Ocean Resources Management Plan Author/Organization: State of Hawai‘i Office of Planning – Coastal Zone Management Program	State coastal management plan	• The Hawai‘i Ocean Resources Management Plan (ORMP) is a statewide plan that seeks to resolve coastal problems and issues that are not adequately addressed by existing laws and rules. • The plan is a requirement under Hawai‘i Revised Statutes §205A-62(1) and is a main component of the Coastal Zone Management (CZM) Program. Unlike plans that are created and administered by a single entity, the ORMP is unique in its collaborative implementation through the CZM Network, which includes Federal, State, County, and community representation. • Since 1985, longstanding partners have jointly addressed the State’s shared ocean and coastal resource management priorities, as set forth by each plan update. With the help of the public input and agency expertise, the update process identifies management gaps and focus areas for the next planning horizon. • The 2020 ORMP highlights three areas of need within the coastal zone: Development and Coastal Hazards, Land-Based Pollution, and Marine Ecosystems.

Source Information	Topic	Key Findings
Title: Biodegradable Plastics & Marine Litter: Misconception, Concerns and Impacts on Marine Environments Author/Organization: United Nations Environment Programme (UNEP), 2015	Marine litter	• Deciding what constitutes best environmental practice through the choice of different plastics and non-plastics is not straightforward. Life Cycle Assessments (LCA) can be used to provide a basis for decisions about optimal use of resources and the impact of different processes, materials or products on the environment. For example, LCA could be employed to assess the use of plastic-based or natural fibre-based bags and textiles, and conventional and biodegradable plastics. • In one LCA-based study of consumer shopping bags, conventional PE (HDPE) shopping carrier bags were considered to be a good environmental option compared with bags made from paper, LDPE, non-woven PP and cotton, but strictly in terms of carbon footprints (paper to cotton in order of increasing global warming potential (Thomas et al. 2010). This analysis did not take account of the social and ecological impact that plastic litter may have. • In contrast, an analysis of textiles – that included factors for human health, environmental impact and sustainability – placed cotton as having a much smaller footprint that acrylic fibers (Mutha et al. 2012). However, it is important to examine what is included under such broad terms as "environmental impact." • A Third study which also performed an LCCA-based assessment of textiles concluded that cotton had a greater impact that fabrics made with PP or PET, and a much greater that man-made cellulose-cased fibers (Shen et al. 2010). The was on the basis of ecotoxicity, eutrophication, water use and land use. • In conclusion, clearly the scope of an environmental LCA can determine the outcome.
Title: Single-use plastic bags and their alternatives Author/Organization: United Nations Environment Programme (UNEP)	Plastic bags and alternatives	• The more recent LCAs included in this report confirm most of these conclusions, with some additions and modifications. In summary, they indicate that: • Single-use LDPE or HDPE bags rank worse than other bags in terms of littering potential. However, the ranking order of bags in terms of littering potential is more or less opposite to the ranking in terms of other environmental indicators (Civancik-Uslu et al. 2019). The weight of the bags contributes to this difference: making a bag heavier will make it more difficult for the wind to catch, hence reducing probability to become litter, but it will increase all other environmental impacts of the bag. • LDPE produced from recycled plastics or renewable resources has much less climate impact than fossil-based LDPE, but does not solve the problem associated to impacts of littering. Bio-based LDPE is also worse than conventional LDPE in other environmental aspects (COWI A/S and Utrecht University 2018). • A reusable LDPE bag has lower climate impacts than conventional single-use plastic bags, if they are used 5-10 times more than the single-use bag (Edwards et al. 2011; Kimmel 2014; CivancukUslu et al. 2019). However, Kimmel (2014) finds that the average reuse rate in the US is 3.1 times. • Durable PP bags are heavier than reusable LDPE bags, but they are also more durable. In order for PP bags to be environmentally competitive with LDPE bags, they need to be used more times. • The data suggest that they are used on average 14.6 times in the US (Kimmel 2014) which is approximately what is needed for PP bags to be competitive with conventional, single-use plastic bags (Edwards and Fry 2011; Kimmel 2014). • A cotton bag must be used even more times to be environmentally competitive. Mattila et al. (2011) state that a cotton bag reused 50-150 times is likely to be better for the climate if the waste management system is dominated by incineration or efficient sorting and recovery of the waste. However, Edwards and Fry (2011) find that the cotton bag must be reused hundreds of times to be environmentally competitive to SUPBs. • Paper bags score worse than fossil-based single-use bags in terms of eutrophication, and often also on climate and other environmental aspects. Kimmel (2014) finds that the paper bag with 100% recycled fibers scores better than the kraft-paper bag in all environmental aspects, but still worse than the SUPBs in all impacts except acidification, and freshwater and marine toxicity. In contrast, Mattila et al. (2011) and Dahlgren & Stripple (2016) find that kraft-paper bags score relatively well in climate. Together the studies imply that a paper bag can be better for the climate than SUPBs, if the latter is heavy, if the paper is produced in efficient integrated mills driven by renewable energy, and if the waste-management system is dominated by recycling and incineration. They can also be environmentally competitive if they are reused several times (Edwards and Fry 2011).

Source Information	Topic	Key Findings
Title: Single-use plastic bags and their alternatives (Cont.) Author/Organization: United Nations Environment Programme (UNEP)	Plastic bags and alternatives	• A starch-based (biodegradable) bag has no significant environmental benefits compared to conventional SUPBs in the reviewed studies, besides reduced impacts of littering. It has a large impact on the climate because the production of fossil-based co-polyesters (COWI A/S and Utrecht University 2018) and because it is assumed to degrade in landfills, forming methane (cf. Mattila et al. 2011). • Adding a prodegradant to conventional HDPE (oxo-biodegradation) to reduce the visual impacts of littering might increase other environmental impacts, but only slightly since the degradable plastic bag is assumed not to degrade in landfills (Edwards and Fry 2011; Edwards and Parker 2012).
Title: National Sustainable Materials Management Prioritization Tool (online tool) Author/Organization: U.S. EPA	Paper vs. plastic bags	Paper bags and coated paper • Most significant potential environmental issues for the purchasing of paper: ○ Land use ○ Human health toxicity ○ Energy use ○ Commercial RCRA Hazardous Waste ○ Acid Rain • The most significant supply chain sources of these issues for this purchase are: ○ Paper ○ Timber and raw forest products ○ Wood pulp ○ Other basic inorganic chemicals ○ Electricity *see graph below