

**EPA Recycling Infrastructure Grant  
Working Group**

**Coordinated**

**by**

**Zero Waste Hawai'i Island**

**Submission for Request for Information  
Docket ID No. OLEM-2022-0340**

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## EXECUTIVE SUMMARY

### **Background**

A historic [Bipartisan Infrastructure Law](#) was passed by President Biden, November 15, 2021. To enact the law, the U.S. Environmental Protection Agency (EPA) issued a Request for Information (RFI) on June 3, 2022 to design the Solid Waste Infrastructure for Recycling grant program. The program will provide \$275 million for Solid Waste Infrastructure for Recycling grants to counties and states. The funding will be allocated as \$55 million per year from Fiscal Years 2022 to 2026; 40% will be targeted for rural and socio-economically disadvantaged communities. Hawai'i County is well positioned to be a recipient of these funds having one of the highest poverty levels in the country at 21.1% and 97.9% of its population residing in rural areas.

### **The importance of stakeholders**

To complete the RFI for Hawai'i County, a working group made up of representatives from Zero Waste Hawai'i Island, Hawai'i County Department of Environmental Management, and community members with expertise in recycling, reuse, and source reduction developed and distributed a survey in June 2022 to diverse stakeholder groups, representing small businesses, non-profits, Native Hawaiian organizations, education, tourism, County Council, County government agencies, housing community associations, and individuals. Questions in the survey loosely followed EPA questions covered in Section IV. Request for Information, posted in the Federal Register (Notices, pages 35200-35202).

There were 76 responses to the survey representing the stakeholder groups listed above.

Respondents identified the top barriers preventing recycling and reuse as:

- Inadequate infrastructure (facilities and warehouse space),
- Inadequate collection systems,
- Insufficient end markets for reuse and recycling,
- Policy and staffing needs.

Many respondents also pointed out that inadequate collection systems within the County disproportionately impact rural, low income and houseless communities. Our current systems create inequities; due to inconvenience, limited availability, and distance to facilities. Likewise, a lack of service providers and restricted access to county recycling programs makes recycling inconvenient and cost prohibitive for the commercial sector. Several respondents also raised environmental justice concerns of landfills and waste management systems being located next to, or near to, Hawaiian Homelands as well as other lower income communities, and identified the potential for leachate from the unlined Hilo Landfill to contaminate nearby groundwater and marine environments.

The survey also revealed widespread interest among respondents in improving our County's recycling and reuse programs. Fifty respondents are willing to change behavior/business

practices if they could make money from diverting waste and fourteen respondents would change depending on the cost to transition to a new system versus the return on investment. Thirty respondents are interested in being contracted by the County to divert recyclable or reusable items from landfilling, and fifty-five respondents may collaborate with the County to apply for the EPA Infrastructure for Recycling funding.

### **The importance of having a vision**

Hawai‘i is the most isolated, populated landmass on the planet. This isolation has created a dependence on imported goods, to the detriment of our communities, as was particularly evident during the height of the COVID 19 pandemic. The vision is to shift from depending on off-island and out-of-state end markets; towards the development of locally based end markets for post-consumer materials management. This move will bring our island closer to climate resilience, by improving the health, self-reliance and equity within Hawai‘i’s communities. These circular economies and local industries will help mitigate the negative effects of climate change, by reducing emissions from shipping, pollution and the landfilling of organic materials.

### **Problems and potential solutions and costs**

The report addresses current waste management practices and inadequacies, or lack of infrastructure. Agricultural, slaughterhouse, green and food wastes; single-use plastics and plastic packaging; single-use glass; corrugated cardboard and paper; construction and demolition debris; textiles; and abandoned vehicles are covered.

Survey respondents’ input is incorporated throughout the report in addressing problems and considering potential solutions. Where possible, estimated costs are provided. The ideas and solutions presented in this report should be interpreted as a good launching point for further stakeholder engagement, as well as research and discussion into the methods we will adopt to divert these materials from landfilling.

### **Taking the vision further**

The concept of resource recovery parks, geographically distributed for ease of access by communities around Hawai‘i Island, is one way to actualize the vision. Such parks provide a one-stop place for individuals and businesses to drop off materials for reuse or recycling, thus diverting such materials from landfilling. Through the development of these parks, entrepreneurs and existing small-business owners provide the means by which end-markets are created. For example, a farmer in need of amendments for volcanic soil is able to obtain locally-produced compost that has been created from shredded cardboard, food waste or agricultural waste such as cattle manure. Food waste, almost 50% of which is currently landfilled, is diverted and utilized, and the production of methane (a major contributor to greenhouse gas) is minimized. Shipping from off-island, delays, and single-use packaging are also eliminated, reducing costs for the farmer and the consumer.

### **Hawai'i Island becomes stronger**

A coalition of Native Hawaiian organizations, businesses, non-profits, and communities focused on reuse, composting, repurposing, upcycling and then recycling creates local jobs and strengthens our local economy. Food security improves, communities thrive and self-reliance sustains our island during stable times and in the face of man-made or natural disasters. Workforce development for our youth and justice-involved individuals, as well as financing social programs to help our disadvantaged communities on the island, are of paramount interest and importance.

### **Making it happen through EPA funding**

A phased approach for funding over five years; in the first two years the focus will be engaging stakeholders and developing plans and public-private partnerships, and the following three years for implementation.

### **Moving towards a circular economy**

A shared vision of shifting away from a linear economic system (where products are made, sold and disposed of) to a circular economy (products are made, sold and reused or recycled) is a growing movement globally and nationally. Due to Hawaii's remote location, moving to local processing and providing end-markets for reused or recycled components and supplies minimizes Hawai'i's dependence on off-island producers and end-markets. A circular economy strengthens Hawai'i's self-reliance.

### **Intent is not everything; policy is important!**

Intent cannot lead to productive outcomes if policies are not in place to support farmers, businesses, organizations and communities. For example, the report references several state-level policies that were passed in the last legislative session to provide funding for pilot composting programs. Changes in regulations ease hindrances in the permitting of composting facilities. Hawai'i County was also awarded funding for Phase I planning as part of the Build Back Better Regional Challenge (BBBRC) grant to improve systems of pre-consumer organics diversion, and an application has been submitted for BBBRC Phase II funding. Passing policies to allow for adequate funding of waste diversion programs in the Department of Environmental Management (DEM) and ordinances that set diversion targets for the County are crucial in reducing the amount of material being landfilled.

### **What is next?**

The report, including the survey responses that do not disclose identities, was electronically submitted to the EPA by the deadline, July 25, 2022. The EPA indicates the Request for Applications (RFA) will be Fall 2022. This report was put together in an effort to encourage the county to increase its capacity to pursue this funding.

## **Overview of Hawai‘i County**

### *Geography and Population*

Hawai‘i is an island state, approximately 2,506 miles from the West Coast of the contiguous lower 48 states. Domestic and international commodities (food, construction supplies, equipment, etc.) are primarily shipped by ocean from West Coast ports. For certain commodities that require less than a shipping container (LCL), items are shipped on pallets and then barged from Honolulu to Kawaihae Harbor (West side of Hawai‘i Island & 132 nautical miles from Honolulu) or to Hilo Harbor (East side, 200 nautical miles from Honolulu). In a 2007 state-wide survey of 205 agribusinesses and 25 food manufacturers, 100% used interisland shipping (69.9% were LCL). The highest percentage of inter-island agribusiness shipping was done to and from Hawai‘i Island (p. 4-5) <sup>1</sup>. Thus, the movement of commodities to and from Hawai‘i Island often entails an extra amount of ocean freight at additional costs and time.

Hawai‘i Island - the political designation is Hawai‘i County - covers 4,028 square miles and is the largest island in the State. It represents 63% of the State’s land mass. In contrast, both Rhode Island and Delaware combined, are smaller in size than Hawai‘i Island. Hawai‘i county’s population in 2022 is estimated at 201,525 and has shown the most rapid growth in the State; 8.43% between the 2010 and 2020 censuses. Due to the large size of the island, population density is only 50.03 persons per square mile compared <sup>2</sup> to the island of O‘ahu - 1,596.24 persons per square mile. For 2022 estimates, Delaware’s population is just under 1 million, while Rhode Island’s is just over 1 million<sup>3</sup>. In 2010, 97.9% of Hawai‘i County’s population was considered rural <sup>4</sup>.

### *Geology and Agriculture*

Geologically, Hawai‘i Island is the newest island in the State, and has four (of six total) volcanoes that are active. Kīlauea, on the Southeast Rift Zone, is the newest and most active <sup>5</sup>. Because Hawai‘i Island’s agricultural land is volcanic, soil amendments are often needed, particularly in areas that have had recent inundation by lava such as the 2018 “Fissure 8” eruption in the Puna District on the East side of Hawai‘i Island. This district has the largest acreage devoted to farming (see map) <sup>6</sup>. In a survey conducted by the University of Hawai‘i, 46 farms had been affected by the eruption, displacing “1,337 acres of arable land on Hawai‘i Island, for a total reported farm losses of \$27.9 million. These losses included crops (61 percent), land, building structures, inventory and equipment. Respondents included cacao and ‘ulu

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<sup>1</sup> <https://hdoa.hawaii.gov/wp-content/uploads/2013/01/Interisland-Shipping-Report-3-27-08.pdf>

<sup>2</sup> <https://worldpopulationreview.com/us-counties/states/hi>

<sup>3</sup> <https://worldpopulationreview.com/states>

<sup>4</sup> [https://files.hawaii.gov/dbedt/census/Census\\_2010/Other/2010urban\\_rural\\_report.pdf](https://files.hawaii.gov/dbedt/census/Census_2010/Other/2010urban_rural_report.pdf)

<sup>5</sup> <https://www.usgs.gov/observatories/hvo/active-volcanoes-hawaii#>

<sup>6</sup> <https://www.civilbeat.org/2021/02/hawaii-grown-maps/j>

farmers, macadamia and orchid growers and other producers. The agricultural industries with the highest reported losses were floriculture and nurseries, at \$13.3 million, and papayas.”<sup>7</sup>

In other agricultural facts:

- “Hawaii ranks sixth nationally for the sale of tree nuts.
- The island of Hawaii has several large cattle ranches. Cattle and calves are the 3rd most important commodity in the state.
- Hawaii accounts for 100% of the production of 6 foods in the United States: Macadamia Nuts, Coffee, Bananas, Papayas, Taro & Guavas.”<sup>8</sup>

Traditional Native Hawaiian, organic, regenerative, agroforestry, and Korean Natural Farming (KNF) methods are among the types of sustainable agricultural practices on Hawai‘i Island. The Revision and Update of the Hawai‘i 2050 Sustainability Plan was presented to the State Greenhouse Gas Sequestration Task Force on August 18, 2021. Included in the presentation were key themes to achieve the Vision of a Sustainable Hawai‘i, two of which are:

- Pursue innovative opportunities in the energy and agricultural sector to enhance economic growth and food security
- Become more self-sufficient, rely less on imports and utilize existing resources, and build the economy to serve and be driven by local populations (for example, through local food production) (slide 11)
- Of eight focus areas identified during the presentation for the time period, 2020-2030, Focus Area 1 (Promote a Sustainable Economic Recovery) has three strategies specifically targeting agriculture:
  - Support farmer livelihoods
  - Support local markets for locally grown food
  - Promote sustainable & resilient farmland, practices, and infrastructure (slide 16)<sup>9</sup>

### *Poverty, Food Insecurity and Underserved Populations*

In 2016, the poverty level nationally was 15.1% and for the State of Hawai‘i, it was 10.1%. Hawai‘i County, however, was the highest in the State at 21.1%, one of the worst in the nation (p.16).<sup>10</sup> Native Hawaiians (self-identified as a single or partial identity) in the 2010 U.S. Census made up 21.3% of the State population. Hawai‘i County had the highest percent of Native Hawaiians—29.7%—of the four counties (OHA Native Hawaiian Databook, 2021, Table 1.08).<sup>11</sup>

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<sup>7</sup> <http://www.hawaii.edu/news/2018/10/22/kilauea-eruption-agricultural-survey/>

<sup>8</sup> <https://beef2live.com/story-hawaii-ag-facts-116-105035>

<sup>9</sup> <https://planning.hawaii.gov/wp-content/uploads/Presentation-by-Statewide-Sustainability-Program.pdf>

<sup>10</sup> <https://labor.hawaii.gov/wdc/files/2019/06/Underserved-Population-Report.pdf>

<sup>11</sup> <https://www.ohadatabook.com/CHAP%2001%20Population.21.xlsx>

“Locally between 2016 and 2018, the USDA estimated that 8.0% of Hawai‘i households were food insecure (Coleman-Jensen et al., 2019). Another estimate of food insecurity rates by county reported 8.7% of Kaua‘i County residents, 10.3% of Maui County residents, 10.5% of Honolulu County residents, and **11.8% of Hawai‘i County residents were food insecure in 2017** (Gundersen et al., 2019)... Certain communities —Waimānalo, the Wai‘anae Coast, **Puna**, Ka‘a‘wa to Wailua, and Moloka‘i—were all calculated to have food insecurity levels exceeding 30% of the population. Results from this study also highlighted certain vulnerable groups: the poor, children, Native Hawaiians, other Pacific Islanders and Filipinos, as well as those who were uninsured or of unknown insurance status (Baker et al., 2001).” (Highlight added for emphasis and relevance to Hawai‘i County.) This 2020 report contains several charts showing that Hawai‘i County has the highest rates of food insecure individuals analyzed by ethnicity, in high school or lower grades, etc. <sup>12</sup>

The Hawaiian Homes Commission Act of 1920 was established by the U.S. Congress “to protect and improve the lives of Native Hawaiians” by providing for homestead lands, administered by the Department of Hawaiian Home Lands (DHHL). Over 200,000 acres are held in trust on all of the islands and are leased to beneficiaries, for \$1 per year for 99 years, for pastoral (1,000+ acres), residential (<1 acre) or agricultural (5-40 acres) use. <sup>13</sup> As of March 14, 2022, there were 28,700 people on the waitlist to receive a DHHL lease. <sup>14</sup> Of all the islands, Hawai‘i Island has the highest amount of DHHL lands—116,963 acres (p.6). <sup>15</sup> In an effort to ease the housing shortage and contribute to improved food security for Native Hawaiians, DHHL recently broke ground on Phase I of the Honomū Subsistence Ag Lots Project. It consists of sixteen one-acre parcels with eventual expansion to include 375 one to three acre lots. <sup>16</sup>

### *Bottle Bill*

Hawai‘i is one of ten states with a bottle bill. The CRV (container redemption value) is 5-cents, hence the program is known as HI-5. 88% of Hawai‘i’s deposit beverage containers sold are redeemable, but the return rate for 2019 was only 62%. Oregon, with the same percentage of redeemable beverage containers sold in 2019 (88%), has a 10-cent redemption value and a much higher return rate of 86%. <sup>17</sup>

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<sup>12</sup> <https://www.hiphi.org/wp-content/uploads/2020/06/Final-Food-Security-Data-Brief-PIRKLE.pdf>

<sup>13</sup> <https://dhhl.hawaii.gov/dhhl/>

<sup>14</sup> <https://www.hawaiinewsnow.com/2022/03/15/dhhl-survey-45-respondants-would-accept-housing-assistance-be-removed-waitlist/>

<sup>15</sup> <https://dhhl.hawaii.gov/wp-content/uploads/2012/05/Island Plan Hawaii 2002.pdf>

<sup>16</sup> <https://dhhl.hawaii.gov/2022/04/08/dhhl-breaks-ground-on-honomu-subsistence-ag-lots/>

<sup>17</sup> <https://newsroom.tomra.com/bottle-bill-states/>

## *Hawai'i County Waste Management Program*

### **Funding**

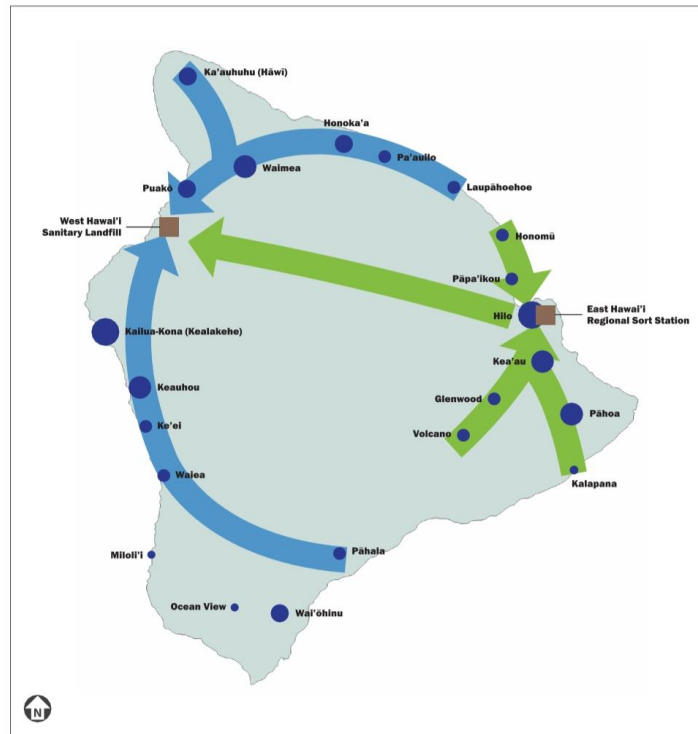
Solid waste and waste water management are handled at the county level by the Department of Environmental Management (DEM). In FY21-22, 8.6% of the County's budget went to sanitation and waste removal; revenue to the department was \$37,841,890 and came primarily from general revenue (59%; property tax funds comprise the largest portion, but special funds are also a source), landfill tipping fees of commercial waste (31%), and recycling, e-waste and deposit beverage container grant programs (2%). During the same fiscal year, 69% of the budget was spent on landfilling waste (landfill equipment, operations and salaries & wages of County personnel), while 15% of the budget went to the waste diversion programs.

### **Collection and Disposal Systems**

Currently the West Hawai'i Sanitary Landfill at Pu'uana'hulu (WHSL) is the only landfill in operation on the island. The Hilo landfill stopped accepting waste in August 2019, requiring waste that was previously disposed of in Hilo (~50% of the total waste generated on the island) to be hauled 70 miles to the WHSL. Eight 18-wheeler shipping trucks make the daily trip to WHSL. The lifespan of the island's sole landfill is estimated to be between 30-50 years.<sup>18</sup> DEM operates 21 transfer stations across the County, which collect residential waste (Figure 1). Collection of green waste and recyclables (cardboard, glass, HI-5 beverage containers, scrap metal and white goods) is available at select locations (some rural transfer stations do not collect recyclables).

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<sup>18</sup> <https://www.hawaiipublicradio.org/local-news/2020-01-09/hawaii-island-has-decades-of-landfill-space-but-still-faces-challenges-in-dealing-with-its-waste>



Source: County of Hawai'i DEM SWD

Exhibit 9-2  
Generalized Haul Route From  
East Hawai'i Regional Sort Station

**Figure 1. Map of Hawai‘i Island landfills/transfer stations.** (Arrows show waste hauling routes in east and west Hawai‘i; since 2019 all waste is hauled and disposed of in the West Hawai‘i Sanitary Landfill. Blue dots=transfer stations, size indicative of the proportion of waste generated by that location. Brown squares=Landfills) <sup>19</sup>

Select transfer stations also operate reuse stores where reusable items such as furniture, small appliances, dishes etc. can be donated and resold at very affordable prices.

Hawai‘i County is the only county in the state that does not offer municipal pick-up to residents; all residents are required to self-haul rubbish to the transfer station or hire a private hauler. There is only one residential hauler (in operation on the west side of the island) that collects recyclables. Commercial waste is not accepted at the transfer stations (although some small businesses likely do so undetected) and a private hauler must be hired. Recycling is more expensive for businesses than landfilling waste, so there is little

financial incentive to do so; likewise, this economic disincentive means that there are currently no haulers offering comprehensive recycling service to the commercial sector.

### **Recycling and Reuse Programs**

In 2019 the County reduced its recycling program, switching from a mixed bin system, which collected #1 and #2 plastics (jugs, bottles and jars), mixed paper (office paper, newspapers, junk mail, magazines, cereal boxes and paper towel rolls), glass bottles and jars, corrugated cardboard/brown paper bags, and food cans. They now use a two-bin system which collects corrugated cardboard and brown paper bags (which are shipped to Asian markets for recycling) and glass (processed on island and used for construction). Food cans can be placed in the scrap metal bins at locations that accept it. White goods and green waste are also accepted at 13 transfer stations.

In addition to the County recycling program, #2 plastic jugs, bottles, and jars are accepted at Business Services Hawai‘i, a private recycler, on the east side of the island in Kea‘au. They also accept tires and vehicles, for a fee. Other options for plastic recycling are Volcano Precious Plastic which accepts #5 plastics from members (annual membership fee \$60) and Upcycle Hawai‘i that accepts #4 LDPE plastic bags. These programs are limited in scale and drop off locations are only in Hilo (east side of the island). Compost Hawai‘i was offering limited pick-up service for residential food waste, but due to recent equipment failure, services have been suspended. Much of the pre-consumer food waste for large producers such as schools, grocery stores, restaurants and hotels are diverted from landfilling through informal relationships with piggeries.

Electronic waste collection, at no cost to residents, is funded in part through a flat annual registration fee of \$5,000 per year, paid to the state by electronic retailers. The state then allocates grants to each county to fund their residential e-waste recycling programs. Maui County supplements its grant with public funds, while Hawai‘i County relies solely on the state grant, which in 2021 was \$85,000. As Hawai‘i County cut funding, collection sites also decreased, down to two sites for a total of three days per month by 2022. In FY21-22, the County's program was suspended due to lack of funds. E-waste continues to be accepted at one location, a private recycler, for both residents and commercial entities, for a recycling fee. This past legislative session, bill HB1640 was passed and signed into law to update and improve the state's e-waste recycling program, such as requiring manufacturers to fully fund it.

Collection of household hazardous waste is usually limited to six collection days per year that are held in different locations around the island. It is a free program for residents offered by the County.

There are a multitude of opportunities for reuse and donation of materials on the island: thrift stores (specific examples detailed in question responses) and transfer station reuse stores capture much of the material that might otherwise be landfilled.

### **Policies and Plans**

The County's Integrated Solid Waste Management Plan (ISWMP) was updated in 2019 and is the guiding document for diversion and source reduction programs within the county. In 2007 a resolution was adopted by the county to embrace and adopt the principles of zero waste as a long-term strategy. In 2008 the Zero Waste Plan was developed, but the plan was not fully implemented due to the economic downturn that began at that time. The Zero Waste Plan was updated recently by Recycle Hawaii but has not been adopted by the County. The County is currently doing a Life Cycle Assessment to determine the benefits of recycling, given Hawai'i's remote location and lack of local processing infrastructure for most materials. Results of that study are anticipated to come out at the end of this year.

There are currently no policies enacted in the County that mandate or set targets for diversion. Recycling is not required of commercial industry or residents, and nothing (including hazardous waste) is banned from landfilling.

### **Challenges**

Primary challenges facing DEM are: inadequate funding and staff, and difficult/slow filling of vacant positions. Likewise, the solid waste funding structure, inadequate collection systems, and lack of policies prioritizing diversion make it difficult to transition away from a system of landfilling post-consumer materials. Although we have a solid plan on how to reduce and divert waste from landfilling in the 2019 ISWMP, we do not have the funds to implement it.

While private interests have emerged in recent years to divert cardboard, plastics, and organic waste from landfilling, the economics are prohibitive as material processing is labor-intensive in the absence of equipment to scale up operations. Most businesses are struggling to stay afloat, are limited in scope, and can only address a small fraction of the waste stream.

### *The Vision*

Reduction in County recycling services in 2019 spurred interest among private citizens and businesses that want to improve post-consumer material management systems on the island and throughout the state. A shared vision of shifting away from a linear economic system to a circular economy is a growing movement, and is becoming a mainstream concept. Due to Hawai'i's remote location, we have identified the need to shift towards local processing and end

markets for materials as well as source reduction through reducing and reusing.

Diversion of organic waste (paper, cardboard, green waste and pre/post-consumer food scraps) is our top priority; as organic waste comprises >50% of the waste stream and, as we are a young volcanic island, we need soil amendments for our local agriculture movement. Lack of permitted processing facilities and collection systems are preventing diversion of organic waste; however, progress is being made. Several state-level policies passed in the last legislative session providing funding for pilot composting programs, and changes in regulations will ease hindrances in permitting of composting facilities. Our County was also awarded Phase I planning funding as part of the Build Back Better Regional Challenge grant to improve systems of pre-consumer organics diversion, and an application has been submitted for Phase II of BBBRC, which would provide funding for implementation.

Another priority in the County is source reduction of single-use packaging through reusable packaging systems (i.e. refillable glass bottles and jars and reusable to-go ware and cutlery). While small pilot programs are underway, we will need large initial investments in infrastructure (i.e. high capacity washing facilities, material storage containers, etc.) to make these systems economically viable and take them to scale. An Extended Producer Responsibility bill for packaging (HB2399) with an emphasis on providing funding to transition to reuse systems for packaging was introduced last session; the bill made it through all the house and senate committee hearings, however failed to pass. It will be reintroduced next year.

We also envision the creation of Resource Recovery Parks (RRP) island-wide to enable convenient access and reuse, repurposing, processing, and creation of local end markets for materials such as textiles, cardboard and paper, plastics, e-waste, glass, furniture, and construction/demolition materials. Insufficient warehouse storage space is also a hindrance to recovering materials. RRP's are a comprehensive and convenient way to centralize, store, sort, and redistribute materials.

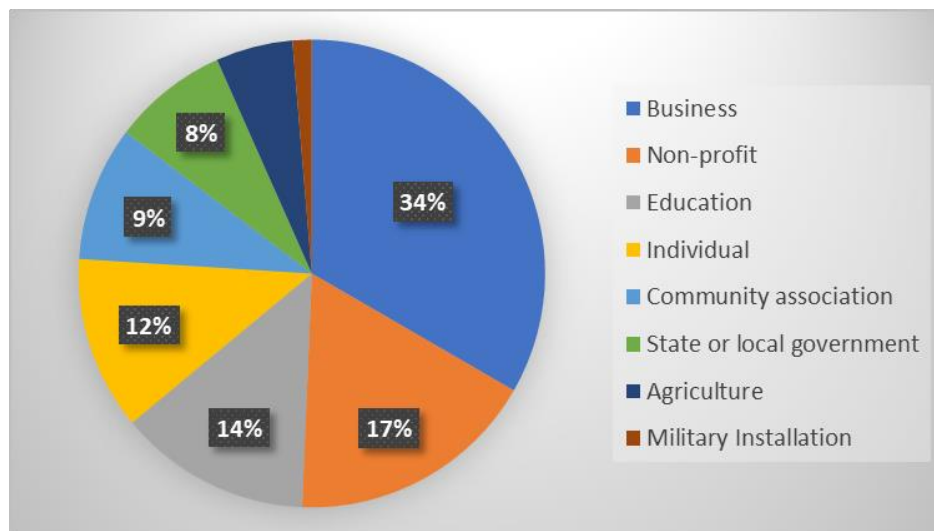
We also need to improve collection systems for materials by setting up source-separated collection bins at all transfer stations and evaluating the feasibility of municipal pick-up service. These would serve to make recycling as convenient and cost effective to residents and businesses as landfilling. Our current system of self-haul makes recycling and waste disposal inaccessible to many of our low income residents that do not own vehicles and cannot afford to hire private haulers. In addition, the changing locations and times of certain recycling opportunities (e.g. e-waste) are confusing to residents and contribute to low participation in these events.

Passing policies that restructure how DEM is funded and ordinances that set diversion targets for the County will be crucial in reducing the amount of material being landfilled. There is much work to be done to improve our materials management systems in Hawai'i County, and funding through the EPA recycling infrastructure grant will be vital for us to make the transition to a circular economy. There is growing awareness that public-private partnerships may be the best

way to address the inadequacies of our County's waste diversion programs.

## Introduction

This report, in response to the RFI, is a collaborative effort drafted by a hui (Hawaiian for an association or group) made up of representatives from Zero Waste Hawai‘i Island, Hawai‘i County Department of Environmental Management, and community members with recycling, source reduction, reuse and other sustainable materials management knowledge. Our report includes an analysis of responses to a survey that was sent in June 2022 to diverse stakeholder groups throughout the County which included: businesses, non-profits (including Native Hawaiian organizations), education, tourism, County Council members, County government agencies, housing community associations, and individuals. We had 76 responses to the survey representing the major groups indicated in Figure 2. The purpose of the survey was to gather information from stakeholders in response to questions covered in Section IV. Request for Information, in the announcement posted in the Federal Register on June 9, 2022 (Notices, pages 35200-35202).



**Figure 2 - Percentage of Respondents by Stakeholder Category**

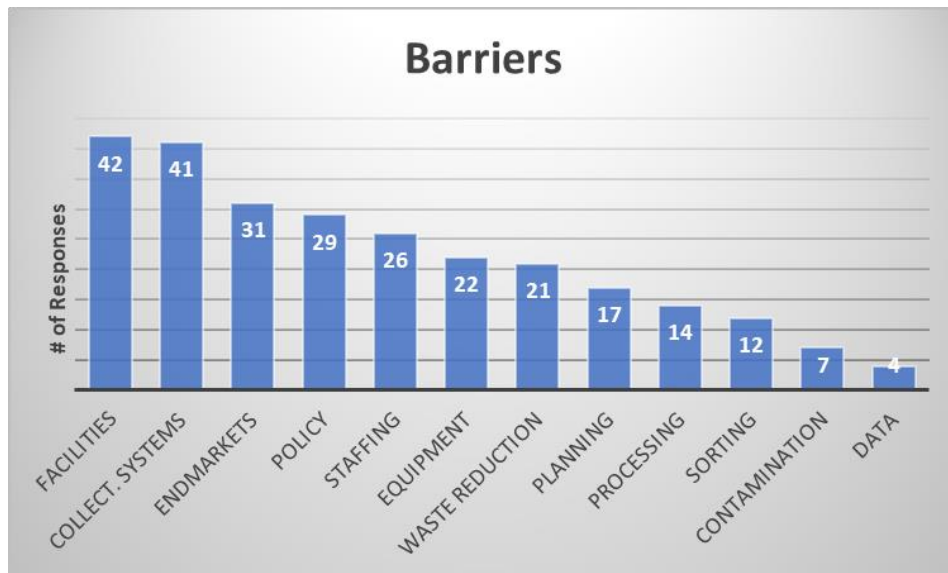
This report is based on a compilation of survey responses that loosely addressed questions in the RFI. Direct and edited survey responses are woven throughout this report. The survey is attached as Appendix A. Appendix B-D includes respondents' direct responses to long text survey questions. Appendix E includes a summary of responses from three multiple choice questions from the survey.

The survey revealed significant interest among respondents to work with the county to improve materials management systems: 55 of the respondents were interested in collaborating with the County to apply for EPA recycling infrastructure grant funding, and 46 respondents expressed

interest in receiving a contract from the county to recycle or reuse materials. Likewise, 50 respondents indicated willingness to change current business practices or behavior if they could make money from recycling or reusing post-consumer materials; an additional 12 indicated they would consider changing depending on the cost to transition to a new system vs. the return on investment. See Appendix E for a full summary of these results.

**Question 1:** *What are the barriers and challenges facing Hawai‘i county regarding post-consumer materials management and how can EPA grants assist in overcoming those barriers?*

Our survey revealed that the top barriers perceived as preventing stakeholders from recycling and reuse are infrastructure (facilities and warehouse space), collection systems, insufficient end markets for reuse and recycling, followed closely by policy and staffing (see Figure 3). Funding from the EPA Recycling Infrastructure grant will help with hiring/contracting staff to coordinate stakeholders and develop plans in years 1-2, and to finance the purchase of equipment and facilities (infrastructure) to implement the plan in years 3-5.



**Figure 3 - Respondents Top Needs to Increase Solid Waste Diversion from Landfilling (By number of respondents)**

**Question 2:** *Are there other activities that EPA should consider for funding eligibility when completing the design of the grant program? (planning, facility-specific feasibility studies, infrastructure improvements)*

The top responses (to barriers to recycling in the County) were lack of facilities, collection systems, and end markets. While these are the direct causes of poor diversion in the County, policy and staffing (which were ranked fourth and fifth) must be addressed before we can

improve the direct causes. Money for **staffing** is a critical need across all sectors dealing with materials management in Hawai‘i County, state and county government, non-profit, and private sectors. Many of us working in the nonprofit sector are doing so as volunteers (including the drafters of this RFI report). There is growing consensus that public-private partnerships may be the most feasible means to bridge the gaps to improving our County’s materials management systems. While funding is needed for planning, flexibility in allowing money to be spent on “human infrastructure”, i.e. salaries to pay staff (i.e. contractors to do planning/stakeholder engagement, and funding for a temporary hire to handle contracts within the county government) is a fundamental need.

Permitting funds to be used to **contract policy experts to provide technical assistance to county council members to:** (1) draft and pass policies to fix underlying problems with how the Department of Environmental Management is funded and (2) pass ordinances that require materials be diverted from landfilling e.g. banning cardboard. This would certainly hasten improvement in the County's materials management systems. Hawai‘i County has several council members that are concerned and interested in waste management issues, but change happens very slowly as their time and knowledge of the problems and policy related solutions is limited.

Although the Request For Information is explicitly focused on recycling, **money for infrastructure to reduce waste**– specifically, washing facilities to transition to reuse systems to reduce single-use plastics– would be an important use of this funding in Hawai‘i County.

**Question 3:** *What are some examples of post-consumer materials management projects, studies or initiatives, and associated estimated costs, that would support disadvantaged communities, rural communities, communities with environmental justice concerns, and tribes and territories?*

\*\*\*Much of the text under question 3 and 4 was pulled directly or only slightly edited from respondents’ answers to a survey question regarding socioeconomic concerns within the county and may be interpreted as opinions. While some of the responses may be controversial, the authors of this RFI felt it was important to include these statements (particularly when coming from groups representing disadvantaged communities with environmental justice concerns within the county).

**The Problem:** Inadequate collection systems disproportionately impact rural, low income and houseless communities. Access to and convenience of participation in recycling programs in Hawai‘i County is challenging. Collection systems are poor for businesses and residents alike. A motivated individual or business with the time, money and knowledge can divert much of their waste from landfilling, but our current systems create inequities due to inconvenience, limited availability, and distance to facilities. Currently, the burden of sorting and transporting waste and recycling is placed on consumers and businesses, who are often overstretched as it is.

Disposal of waste, let alone recycling, is a challenge for those that live in rural areas, do not have their own transportation, are disadvantaged (disabled, elderly, low income etc.), and are struggling to simply get by. Low income populations living in rural areas, with minimum access to transportation, low finances, and limited time to dispose of waste, lead to illegal dumping occurring on private land. In many cases, rubbish accumulates where residents reside or is dumped in gulches or roadsides in nearby rural communities. For example, tires and vehicles are dumped simply because the cost to properly dispose of them is beyond the means of some residents.

Likewise, lack of collection of recyclables at rural transfer stations reduces the ability of residents in these areas to participate in the minimal recycling programs the County does offer. Particularly, residents on the east side of the island are facing economic hardship which make it difficult to participate in recycling programs (i.e. they have to drive long distances to drop off recyclables). Some residents cannot afford high gas prices. HI-5 beverage container redemption value also may not be high enough to provide an incentive to recycle. The burden imposed by recycling on lower socioeconomic groups needs to be addressed. Similarly, recycling is a volume business, and the low population density over large areas translates into low collection volumes, making the economic viability of businesses in this sector precarious at best.

Possible Solutions: Recycling should be made as easy and affordable as landfilling is, for everyone—businesses, organizations and residents alike—and consideration should be given to designing collection systems that are equitable and do not exclude our disadvantaged communities. Investment in infrastructure and greentech/cleantech should allow socially equitable access to recycling and recovery, job creation, workforce development and educational opportunities (particularly for youth and justice-involved groups). Good, living-wage jobs should be created for the local community - jobs in transport, warehousing, logistics, sales and business management. Investment in recovery infrastructure will drive and enable the foundation for a circular economy. Every dollar spent within the local recovery economy stays on the island. Investment in infrastructure will also support sustainable and socially focused entrepreneurial and ecopreneurial ventures. Many recyclables, once processed and quality-controlled, are now a resource which is critically needed as feedstock for other systems. Leveraging proven technology and allowing development and growth of low impact light industry, such as local processing of glass, will both increase diversion of waste from landfills and generate usable, recycled products that will benefit the community.

Municipal pick-up services in densely populated city centers would improve participation of those residents without the transportation or time to self-haul their recyclables to transfer stations. To improve rural community participation in recycling programs, recyclable collection hubs could be established in rural housing developments, or municipal pick-up could also be considered. Most community members are just trying to survive financially. Most are already overtaxed: working, raising families, taking care of loved ones, etc. Any system that is created

needs to be easy and accessible, and people need to see a value in participating in it.

Adoption of policies to collect disposal fees at the point of purchase could reduce the problem of dumping of vehicles and tires, by providing a reliable source of funding for the County to operate recycling collection programs at no cost to the consumer at the time of disposal.

The Costs: \$100-200,000 - EPA grant funds are needed in the initial years to contract organizations to plan and conduct community and stakeholder engagement, to design better collection systems and establish policies to fund these systems (i.e. commercial and residential surveys, interviews, and scoping meetings to identify solutions to current barriers).

**Question 4:** *Are there negative impacts from post-consumer materials management facilities on communities? How could grant funds be used to eliminate or minimize those negative impacts? For any projects, studies, or initiatives referenced in response to this RFI, please also provide associated estimated costs.*

The Problem: Landfills and waste management systems have traditionally been located next to, or near to, Hawaiian Homelands as well as to lower income communities. The Hilo Landfill, which is now closed, and the West Hawai‘i Sanitary Landfill at Pu‘uanahulu are in close proximity to Hawaiian Homes, residences, and agricultural areas. The Hilo Landfill is unlined, causing leachate to contaminate groundwater and marine environments. There is little to no data on how landfill leachate is ending up in local waters where many gather, swim, and recreate; specifically, within a pre-dominantly Native Hawaiian community such as Keaukaha. Communities residing near our island's landfills are already at a high risk of homelessness, teen or underage pregnancy, domestic abuse, and do not have the education or resources necessary to present a well articulated argument against placement of these facilities. Local government has historically been corrupt, which makes effecting change from inside very difficult. Given proper means to self educate, investment back into the health of the local community, through the processing and moreover, reduction of our own waste stream— instead of shipping recyclables away and landfilling materials – should quickly become a priority endeavor. With land costs at a premium on Hawai‘i Island, our relatively small inventory of land, as well as the negative environmental impacts traditionally associated with recycling plants, the importance of the EPAs Solid Waste Hierarchy which begins with source reduction and reuse of materials is of utmost importance to sound and sustainable materials management for Hawai‘i Island.

Possible Solution: There is a growing desire among diverse stakeholders in Hawai‘i County to emulate the “Waste To Wealth” initiatives that have been successfully demonstrated in other communities. Building a coalition of businesses, non-profits, and communities to build markets around reuse, composting, repurposing, upcycling and then recycling will create local jobs, strengthen our local economy, and build resilient communities. Workforce development for our youth and justice-involved communities, as well as financing social programs to help our disadvantaged communities on the island, is of paramount interest and importance.

Funding to do water quality tests on storm drains or outflow pipes from the landfill sites to see what contents are leaching into the environment, and determine if contaminants are entering the Hilo Bay, rivers, or other water sources in Keaukaha.

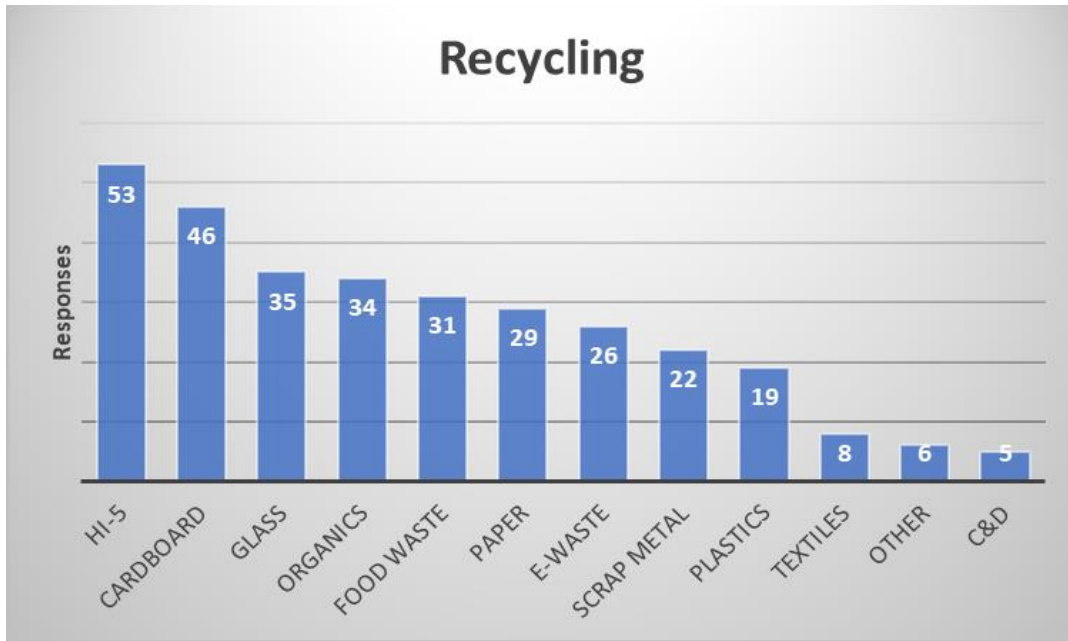
The Costs: \$50-100,000 to hire a facilitator to bring stakeholders together, to determine who and how to build a Waste To Wealth program in the county, is the first step in realizing this vision. See question 5 for specific costs for materials management infrastructure. \$50-100,000 to conduct water quality test near the Hilo Landfill.

**Question 5:** *Are there specific recommendations that EPA should be considering to improve post-consumer materials management?*

The county does not have comprehensive data on the quantity of material being diverted from landfilling by current programs or who is/is not participating in existing diversion programs. An update to the county's waste composition study (last done in 2008) and audit of how businesses and residents handle their solid waste and recyclables is needed. Funding to collect this data would be ideal. Programs that support local markets and materials processing as well as source reduction (particularly shifting to compostable or reusable packaging) make the most sense given Hawaii's remote location. Education will be a necessary component as well, to ensure maximum participation of residents and businesses.

Construction of one or more Resource Recovery Parks is likely the best way to improve local markets and processing of materials. Investing in shared infrastructure will allow for reduction of packaging waste. We also need to improve collection systems; this topic is addressed under question 3.

Below we have detailed our current problems, possible solutions, and associated costs to start diverting common material types in the County. This section was completed based on responses to our survey, and is based on the authors' research and knowledge of possible materials management solutions for these material types. These are merely examples and may not represent the best or most feasible solutions for Hawai'i County. Suggestions by material type are summarized in Table 1.



**Figure 4 - Materials that are recycled by respondents to the survey  
(By number of respondents)**

**Table 1 - Summary of possible solutions to divert most materials from landfilling. Can potentially process most of the materials locally by constructing Resource Recovery Parks.**

\*Materials can likely be processed with the same equipment and infrastructure.

Material Type	Possible Solution	Estimated Costs
Food waste*	Decentralized composting facilities for soil amendments. In-vessel composting systems as one possibility to establish multiple permitted composting facilities.	\$250-300K (freight & installation, labor, land, warehouse facilities) Multiple facilities needed
Slaughterhouse waste	Build a large slaughterhouse or mobile slaughterhouses. Build an anaerobic digestion (AD) facility to compost animal waste.	On farm installation of composter, \$250-300K. AD ~\$400K to \$5 million and average on-farm installation \$1.2 million
Corrugated cardboard*	Mobile shredding of "clean" cardboard distributed at multiple sites around the island, to be used as a soil amendment, weed mats, and mulch.	\$15-20K per high capacity shredder + \$10-20K for site preparation. Multiple needed

<b>Material Type</b>	<b>Possible Solution</b>	<b>Estimated Costs</b>
Mixed office paper and newspaper*	Compost office paper to be used for soil amendments to be combined with food waste in in-vessel systems. Newspaper used by farmers for packing cut flowers, and for animal bedding and packing materials.	\$15-20K for a high capacity shredder. Large capacity in-vessel composting systems \$250-300K (including options, freight and installation, labor, and land and warehouse facilities)
Green Waste*	Large scale composting can include "clean" green waste. Some diverted to in-vessel composting systems. Facilities to support decentralized mulch collection and distribution.	County has an existing green waste contract
Glass containers	Reusing glass beverage bottles by building a large capacity glass bottle washing plant, as well as a glass bottle crushing service, to produce "clean" glass to use for beach and soil erosion and landscaping.	Orbit Bottle Washer (starting price \$40,000), Gripper Bottle Washer (HS-300) (starting price \$62,500. Electric visual inspection machine for glass bottles (\$20,0000), Expleco glass bottle crushers distributed island-wide, (\$10K), or large industrial glass crusher (\$35-60K)
Plastics	Source reduction is our long-term strategy to reduce plastic waste. Interim solutions include ByFusion's ByBlocks, AFTER environmental impacts assessment. Expand Precious Plastics to other communities to collect, shred and make paving stones and planters out of a mixture of Hawaiian cement and plastic shreds. Scaling up diversion of plastics with Upcycle Hawai'i or other businesses.	Shredder Pro (\$8,000), Large extruders, sheet presses (\$6-10,000 each), plastic facilities in each sub-division (cost unknown). TBD - cost of infrastructure for dishwashing facilities to reduce use of single use plastic packaging

<b>Material Type</b>	<b>Possible Solution</b>	<b>Estimated Costs</b>
Used Tires	Change State law regarding tire disposal to keep used tires on-island and use them as a resource. AFTER environmental impact assessment to determine safety of using tires. Tire-derived aggregate (TDA) is created by shredding tires. TDA can be used for retaining wall backfill; Slope stabilization; Vibration migration; Landfill applications; Lightweight embankment fill; Road repair; Septic system draining fields; Subgrade road insulation.	Industrial capacity tire shredder— \$130K-500,000 + labor + land + warehouse facilities
Automobiles	Keep Hawai'i County's rental cars to be sold on-island, and offer affordable used car prices for residents. Expand the County's VDAP and VDAP-PP programs to increase the number of derelict cars per person allowed for removal. Increase the number and location of AV County auctions. Revisit proposed State legislation, that did not pass, to assist counties with abandoned vehicle disposal.	TBD + labor + land + warehouse facilities
Scrap metals and white appliances	End markets are limited on-island for scrap metal and appliances. Everything in this category is currently shipped off-island. Due to the value of metal and large global markets, we will likely continue to ship metal off island for recycling.	N/A

<b>Material Type</b>	<b>Possible Solution</b>	<b>Estimated Costs</b>
Construction and Demolition materials	<p>Policies that require businesses to divert C&amp;D from landfilling will spur private sector growth in reuse and repurposing of valuable materials that are currently being landfilled. Another possible solution is construction of shared warehouse facilities on the east and west sides of the island.</p> <p>Restructure current contracts to include its presence at more transfer stations. Require pre-sorting of C&amp;D to identify compostable materials (scrap lumber and drywall), and road construction additives (concrete debris) or back-fill material when crushed; consider County contracts with quarries for such crushing. Work with Re-use Hawai‘i to expand its presence Island-wide and the construction industry to identify barriers and solutions to improve recycling and recovering of materials in this sector.</p>	<p>Cost of contracts with reuse store vendor and Re-use Hawai‘i TBD + labor (to develop facilitate plans and conduct stakeholder engagement) + land + warehouse facilities (construction labor and materials)</p>
Textiles	<p>Separate textiles from landfilling, sort into natural and synthetic fabrics and ship synthetics to a textile recycling company such as BlockTexx. Further research to investigate feasibility of using textiles for construction materials. Cotton, silk, wool, bamboo, hemp, and linen textiles can be kept on-island and composted or used as substrate to grow fungi.</p>	TBD

***Food waste***

A widespread concern among survey respondents across various sectors is the amount of food waste not currently diverted from landfilling.

The Problem: Lack of infrastructure and Department of Health regulations (lengthy permitting process for all facilities – small or large – and inadequate staff to meet demands) prevents the diversion of food waste that could potentially be processed into soil amendments for use by farmers, backyard farmers/gardeners, and grounds crews at County golf courses, parks and facilities. Diversion of food waste will not only lessen the volume of inputs to the landfill and

reduce the production of methane, but also supports the creation of a resilient agricultural economy – which in turn will strengthen food security for all residents, including those in vulnerable populations.

Possible Solution: An in-vessel composting system, Earth Flow, was recently purchased and installed in Waimānalo on the island of O‘ahu in a partnership between Sustainable Coastlines Hawaii and Full Circle Solutions Hawaii.<sup>20</sup> “The Earth Flow has a Positive Aeration System that delivers high pressure air to the bottom of the compost pile. The Earth Flow also pulls the air from the headspace of the composting vessel and into a biofiltration system. This biofilter can either be pile-based or in-vessel. All wood waste and compostable serving ware should be pre-shredded. Small animal mortalities can be composted in an Earth Flow. The Earth Flow can compost biosolids, animal manure and bedding, meat/dairy/cooked foods, shredded corrugated [cardboard] and paper and many other feedstocks.”

Cost: \$250-300,000 plus options, freight & installation<sup>21</sup> + labor + land + warehouse facilities.

### ***Slaughterhouse waste***

Hawai‘i Island has several large cattle ranches and “cattle is the third most important agricultural commodity in the State.” Survey respondents included one rancher, several farmers, and faculty at the University of Hawai‘i at Hilo’s and at Hawai‘i Community College’s agricultural programs. Large operations for raising cattle, pigs and sheep do not have slaughterhouses on Hawai‘i Island with sufficient capacity. Smaller capacity slaughtering on Hawai‘i Island “is done by two brick and mortar USDA-certified slaughter facilities and one stationary Mobile Slaughter Unit (MSU).”

- The Hawai‘i Island Meat Cooperative (HIMC) MSU slaughters 4 days per month for a total of about 18 cattle, 12 sheep, and 5 hogs monthly
- Kulana Foods processes cattle as well as hogs, sheep, and goat
- Hawai‘i Beef Producers slaughter about 200 head of cattle per month. Though their facility has the capacity to slaughter more, their limited chill space prevents them from increasing this amount” (p. 5)<sup>22</sup>

The Problem: For large-scale slaughtering, cattle are shipped to one of the lower 48 contiguous states for finishing at feedlots, and the end product is shipped back to Hawai‘i. In a 2003 study, all slaughterhouses in the State were landfilling animal waste (p. 11). Hawai‘i is now one of 43 states that considers composting as an acceptable means to dispose of animal wastes under the

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<sup>20</sup> <https://www.civilbeat.org/2022/06/its-all-connected-hawaiis-first-large-scale-food-waste-composter-touts-a-host-of-benefits/>

<sup>21</sup> <https://www.compostingcouncil.org/page/GreenMountain>

<sup>22</sup> [https://sustainability-innovation.asu.edu/food/wp-content/uploads/sites/39/2021/02/MauiReport\\_final.pdf](https://sustainability-innovation.asu.edu/food/wp-content/uploads/sites/39/2021/02/MauiReport_final.pdf)

jurisdiction of the State Department of Health (p. 15). “However, the DOH offers no clear regulatory framework for permitting animal compost operations. Instead, slaughter facilities are treated as solid waste disposal sites and managed on a case- by- case basis.” Besides the problems of safe slaughterhouse waste disposal, animal welfare groups object to the conditions livestock undergo during maritime transport. In 2019, 21 pregnant heifers died due to suffocation while being shipped from O‘ahu to Kaua‘i . DOH issued a statement in 2020 that new shipping standards would be implemented to ensure more humane conditions for live animal transport (p. 7).<sup>23</sup> This unfortunate incident highlights the need for more options to dispose of animal remains.

Possible Solution: Since large facilities produce more animal waste, composting could process livestock waste and allow a large slaughterhouse or mobile slaughterhouses to be built on Hawai‘i Island.<sup>24</sup> Collaborative research among cattle ranchers, agricultural researchers with federal and state agencies, and agricultural faculty could produce a plan for bringing AD to Hawai‘i Island. Pathogen concerns could be mitigated through pasteurization or autoclaving. Research shows that slaughterhouse waste, due to the high fat content, makes biogas energy a useful by-product of AD, and methods to increase the efficiency of AD in producing energy were done at a large slaughterhouse.<sup>25</sup> Properly composted animal waste contains more nitrogen, phosphorus, and potassium (NPK) than plant compost (p. 12).<sup>26</sup> Keeping livestock on-island for slaughtering contributes to a resilient and sustainable economy while increasing food security. Compost made of slaughterhouse waste also benefits farmers, backyard farmers and gardeners, and grounds crews at County golf courses, parks and facilities by making healthy soil amendments available. AD could be a solution, but the environmental effects of energy production must be carefully investigated.

Cost: On-farm installation of an Earth Flow<sup>27</sup>, \$250-300,000 with options, freight & installation + labor + land + warehouse facilities . For an Anaerobic Digester, \$400K to \$5 million & average of on-farm installation is \$1.2 million as determined by the EPA AgSTAR program. A budget calculator developed by Washington State University can be used to determine economic feasibility for an AD<sup>28</sup> + labor + land + warehouse facilities.

### ***Corrugated cardboard***

The County has contracted out the collection of cardboard, which is currently baled and shipped

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<sup>23</sup> [https://sustainability-innovation.asu.edu/food/wp-content/uploads/sites/39/2021/02/MauiReport\\_final.pdf](https://sustainability-innovation.asu.edu/food/wp-content/uploads/sites/39/2021/02/MauiReport_final.pdf)

<sup>24</sup> <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3622235/>

<sup>25</sup> [www.researchgate.net/publication/359929665](http://www.researchgate.net/publication/359929665)

<sup>26</sup> [https://sustainability-innovation.asu.edu/food/wp-content/uploads/sites/39/2021/02/MauiReport\\_final.pdf](https://sustainability-innovation.asu.edu/food/wp-content/uploads/sites/39/2021/02/MauiReport_final.pdf)

<sup>27</sup> <https://www.compostingcouncil.org/page/GreenMountain>

<sup>28</sup> <https://csanr.wsu.edu/anaerobic-digestion-systems/enterprise-budget-calculator/>

over 5,000 miles to Taiwan. Eighteen of the 21 transfer stations accept corrugated cardboard that has no food residue as self-drop by residents. Cardboard is not required to be completely “clean”; tape, labels and staples can be left on. Commercial cardboard collection is done by contract with private waste haulers.

The Problem: Not all self-drop cardboard collection bins are monitored, therefore contamination from non-cardboard solid-waste drops occurs: cardboard is shipped off-island; non-cardboard waste is placed in cardboard receptacles; and some cardboard ends up in regular trash bins at unmonitored transfer stations. Mobile shredding of “clean” cardboard is done island-wide by appointment, but due to the business’s understaffing and lack of large-capacity equipment, is only done on a limited basis. Gardeners have asked for the service to be expanded in order to get more soil amendments. The County lacks the funding to support the service.

Possible Solution: with large-capacity equipment distributed around the island, “clean,” shredded, corrugated cardboard for use as soil amendments would be more widely available for farmers, backyard farmers and gardeners, and grounds crews at County golf courses, parks and facilities. Large pieces of cardboard can also be perforated and used as mulch, allowing water to reach the soil while keeping weeds under control. Mobile shredder, Circle Pack Hawai‘i, and Mā‘ona Community Garden demonstrate their efforts using shredded and perforated cardboard as a resource. <sup>29</sup>

The Cost: \$15-20,000 for cardboard shredder or perforator for heavy duty use. Large capacity Earth Flow <sup>30</sup> machine, \$250-300,000 with options, freight & installation + labor + land + warehouse facilities.

### ***Mixed office paper and newspaper***

The County suspended its mixed office paper and newspaper collection self-drop service at transfer stations in October, 2019. Since then, mixed office paper, glossy paper, box board and newspaper go into the trash bins at the County Transfer Stations. Some businesses and government agencies pay for shredding of sensitive documents, while others shred the paper in-house, bag it, and throw it in a transfer station bin. A few will informally allow people to pick up bags of shredded paper for gardening use.

The Problem: No recycling of mixed office paper and newspaper is being done by the County. Most goes into the landfill, even if shredded. This includes glossy paper and envelopes with plastic windows.

Possible Solution: Compost office paper, which can then be used as soil amendments by farmers, backyard farmers and gardeners, and grounds crews at County golf courses, parks and facilities.

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<sup>29</sup> <https://youtu.be/RiIyFjFFKMQ>

<sup>30</sup> <https://www.compostingcouncil.org/page/GreenMountain>

Newspapers could be collected for use by farmers for packing of fruit, vegetables and cut flowers, as well as for animal bedding, packing materials, etc.

The Cost: \$15-20,000 for cardboard shredder or perforator for heavy duty use. Large capacity Earth Flow composting machine \$250-300,000 with options, freight & installation + labor + land + warehouse facilities

### ***Green waste***

There was also widespread concern among survey respondents for expanding our island's limited green waste processing.

The Problem: High demand for mulched green waste has been evident, with long lines of individuals and landscaping businesses waiting for the mulch produced by a private contractor at County transfer stations. Only eight of the County's 21 transfer stations accept residential drop-off of lawn and garden waste and untreated wooden pallets. Only 2 of the transfer stations allow commercial haulers to drop off green waste, at a \$29 per ton tipping fee (25% of SW tipping fee). Residential and commercial pickup of mulch currently is available only once a month at the Hilo transfer station (East side); on the West side, daily at the Kealakehe transfer station, and Monday through Saturday at West Hawai'i Sanitary Landfill. "The County has been providing greenwaste diversion services in both West and East Hawaii for over 10 years and has successfully recycled over 272,000 tons in the past 7 years (FY2019). However, another approximately 185,000 tons was being dumped in the landfills during this same period or an estimated 40% of the total greenwaste generated".<sup>31</sup>

Possible Solution: Large-scale composting can include "clean" green waste, which can be composted and used as soil amendments by farmers, backyard farmers/gardeners, and grounds crews at County golf courses, parks and facilities.

The Cost: TBD - The county has an existing contract for green waste. Some green waste (possibly at rural transfer stations that do not currently offer green waste pick up) can be mixed with food waste and other organics in in-vessel systems.

### ***Glass containers***

Non HI-5 glass bottle and jar recycling is provided on a limited basis at selected County transfer stations. The private contractor crushes the "dirty" glass bottles and uses them for landscape fill. Non HI-5 wine bottles used by the Island's only winery are voluntarily recycled for crushing.

The Problem: The crushed glass is not "clean"—i.e., paper and plastic labels are left on, and caps are requested to be removed but often are not. No monitoring is done at the collection bin; therefore, contamination occurs from non-acceptable glass (e.g., window, beverage glass, auto

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<sup>31</sup> <https://www.hawaiizerowaste.org/recycle/greenwaste-recycling/#GW-hours>

glass, etc.) and other rubbish. Non HI-5 glass bottles often end up in the regular trash, adding to the volume of non-compostable waste in the landfill. The weight of glass increases transportation costs to landfill. Unless a glass bottle is for a beverage (and designated HI-5 for redeemability), it is single-use. Although beer bottles are designated HI-5, wine bottles are not. Glass bottles used for sauce also do not fall under the HI-5 Bottle Bill. In addition to the food and beverage industry, “clean” glass sand is unavailable from the glass crushing service that is provided. In some shoreline areas, beach erosion causes a loss of sand, which could be mitigated by the use of “clean” crushed glass sand in place of sand harvested from beaches.

#### Solution:

- Reusing glass beverage bottles allows a bottle’s lifespan to be increased, business costs of shipping single-use glass bottles to be minimized, and supply chain disruptions to be mediated. A refillable glass bottle can be tracked and reused 25-40 times.
- A large capacity refillable glass bottle washing service, as well as a glass bottle crushing service, to produce “clean” glass to use for beach & soil erosion and landscaping would divert glass bottles from landfilling.
- In the Northeast, collaborative associations between communities in several states accept “dirty” glass bottles. The result is PGA (processed glass aggregate), which, depending on the State or local code, can be used as an additive/aggregate in road work or concrete.<sup>32</sup>
- Additional products in PGA for road construction may include porcelain toilets, sinks and dishes.<sup>33</sup>

The Cost: An island-wide bottle washing service for small businesses bottling their own sauces & non-carbonated beverages in refillable glass bottles. Equipment needs:

1. Orbit (Model 100 and 200) bottle washer. Fully automated, can handle anywhere from 20-150 bottles per minute. Starting price \$40,000. Requires parts for different bottle types; or Gripper bottle washer (HS-300)- Fully automated, can handle up to 300 bottles per minute, depending on size and can be easily adapted to different bottle sizes and shapes. Starting price \$62,500; or Model 10 bottle washer. It is manual, can handle 2 bottles at a time & can be designed to handle more bottles depending on requirements. Starting price \$10,000.<sup>34</sup>
2. An electronic visual inspection machine for glass bottles, \$20k to \$10k.<sup>35</sup>
3. For single-use bottles or refillables that are at the end of their life span, several Expleco glass bottle crushers distributed Island-wide for bottles deemed no longer refillable (est.

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<sup>32</sup> <https://www.francestownnh.org/transfer-station/files/mixed-glass-recycling>

<sup>33</sup> <https://nerc.org/documents/NERC->

[NEWMOA%20webinars/Recycled%20Content%20PGA%20NRRRA%20NH%20Towns.pdf](https://nerc.org/documents/NERC-NEWMOA%20webinars/Recycled%20Content%20PGA%20NRRRA%20NH%20Towns.pdf)

<sup>34</sup> <http://mcbradyengineering.com/>

<sup>35</sup> <https://www.peco-inspx.com/>

\$10k); or large, industrial glass crusher, \$35k-\$60k.<sup>36</sup> Used to crush “clean” glass into sand for soil & beach erosion, mulch, landscaping, etc.

4. Industrial PGA crusher—cost TBD + labor + land + warehouse facilities.

### ***Plastics***

As mentioned earlier, the County’s recycling of #1 (PET), #2 (HDPE) and #5 (PP) plastics was suspended in 2019 primarily due to China’s enforcement of policies to limit contaminated recyclables from the U.S. from entering their markets. Volcano Precious Plastic (VPP) accepts #1 and #5 plastics but due to the lack of volunteers, collection of “clean” plastics has been reduced to scheduled drop-offs for members (annual fee of \$60) and non-members (\$5 per 15-gallon bag). Business Services Hawai‘i accepts drop-off of #2 plastics at no charge. For both collections, plastic items must be “clean”— no labels, residue or caps.

The Problem: During the pandemic, restaurants and cafes that managed to stay open shifted to take-out service, which exponentially increased the use of single-use plastic containers, cutlery and cups. Globally, 300 million tons of single-use plastic waste is produced annually, 75% of all plastic produced is waste, 91% of all plastic produced is not recycled, and the United States is the world’s largest producer of plastic waste.<sup>37</sup> Plastic, like glass bottles and cardboard, needs to be “clean” (i.e., free from labels and residue, capless and washed, rinsed and dry) before it can be shredded. Currently, VPP volunteers separate plastics by color, visually inspect and hand cut plastic, which is then shredded by a small shredder. The prep work before shredding is time-consuming, as is the shredding, due to the small size of the shredder.

Possible Solution: Source reduction of plastics through reuse programs for packaging (particularly for items that are packaged on island such as prepared foods) is the long term strategy for dealing with plastic waste. Passing EPR legislation at the state level will assist in shifting imported food toward reusable packaging systems. Interim solutions for diverting non-recyclable flexible plastics from landfilling include ByFusion's ByBlocks or something of the like AFTER an analysis has been done about the water and energy use per block and a plan to both monitor, and clean, if needed, any wastewater.<sup>38</sup> Expand Precious Plastics to other communities to collect, shred and make paving stones and planters out of a mixture of Hawaiian cement and plastic shreds and working with Upcycle Hawai‘i to scale up diversion of #4 plastics. Shipping of marketable plastics off island for recycling may be explored. In the interim, source separating plastics out of the landfilled waste stream and possibly stored until a later date when we determine what to do with all the single use plastics is of paramount importance. Burying plastics in a landfill that is a few miles from the coast line (our current strategy) is an imprudent practice.

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<sup>36</sup> [http://www.zendergroup.org/docs/Glass\\_Crushers.pdf](http://www.zendergroup.org/docs/Glass_Crushers.pdf)

<sup>37</sup> <https://seedscientific.com/plastic-waste-statistics/>

<sup>38</sup> <https://www.bypassion.com/byblock/>

The Cost: ByFusion—cost unknown but shipping is likely to be from off-island. Precious Plastic—shredder pro, which has a larger hopper to accept larger plastic items (e.g., plastic chairs, whole containers, etc. which eliminates the need for hand cutting)—\$8,000+; large extruder; sheet press—\$6-\$10,000 each. Plastic facilities, ideally one in each subdivision, could drastically reduce the plastic burden on our single landfill while concurrently producing useful plastic items that would otherwise be imported from the mainland or overseas, creating a circular economy for plastics and allowing expansion of plastic type collection. If the EPA decides to allow the infrastructure funding to be used on source reduction, funds could be used to establish dishwashing infrastructure to support reusable packaging systems throughout the county.

### *Used tires*

State law requires the purchase of a new tire to include disposal fees. Replaced tires are disposed of by the store or dealer selling the new tires. Tires not being replaced but in need of disposal are accepted by several businesses for a fee.<sup>39</sup>

The Problem: Used tires are often dumped along the road in semi-rural and rural areas. This may happen because of the disposal fee, distance to the businesses accepting used tires, and/or the inconvenience of authorized disposal. Used tires are shipped off-island by businesses accepting them. If tires were stockpiled on-island, they could be an “environmental nightmare, ‘triggering spontaneous fires, marring the landscape, and serving as breeding grounds for mosquitoes, “according to a January 2020 study by the Michigan Department of Environment, Great Lakes, and Energy (EGLE). In 2019, the United States generated almost 304 million scrap tires, according to the U.S. Tire Manufacturers Association (USTMA). Today, scrap tires are one of the most recycled products in the United States”.<sup>40</sup>

Possible Solution: Change State law regarding tire disposal to keep used tires on-island and use them as a resource. Tire-derived aggregate (TDA) is created by shredding tires. TDA can be used for: “Retaining wall backfill; Slope stabilization; Vibration migration; Landfill applications; Lightweight embankment fill; Road repair; Septic system draining fields; Subgrade road insulation. Other uses for recycled tires are: Rubber mulch—Often used in playground ground cover, in gardens, and in stables—; Crumb rubber—Granulated rubber used as ground cover in playgrounds, surfacing for athletic tracks, speed bumps, rubber mats, plastics, sealing materials, and asphalt; Rubber powder (similar uses as Crumb rubber); Steel—steel belts can be extracted, smelted and repurposed; and Fiber and nylon are significant components of tires and can be used for Cleanup material, Carpet, Fiberglass, Concrete and Stucco. Shredded tires (TDF) are used in high temperature combustion devices (kilns, etc.) or to create energy. A 1991 US Federal law,

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<sup>39</sup> <https://www.hawaii Zerowaste.org/recycle/tires/>

<sup>40</sup> <https://ehsdailyadvisor.blr.com/2021/03/tire-recycling-and-the-environment-benefits-and-challenges/>

the Intermodal Surface Transportation Efficiency Act (ISTEA), required all state departments of transportation (DOTs) to start adding rubber to a prescribed portion of their federally funded roads, according to C&EN... the mandate was repealed in 1995. About half the states have experimented with incorporating ground tires, known as crumb rubber, into their asphalt mixes, and a handful—like Arizona, California, Florida, and Texas—have led the way in evaluating rubberized roads or building them as standard practice today”.<sup>41</sup>

The Cost: Industrial capacity tire shredder— \$130K-\$500,000<sup>42</sup> + freight + labor + land + warehouse facilities.

### ***Automobiles***

Several respondents expressed concern about the current handling, in our County, of abandoned (AV) and derelict automobiles. Hawai‘i County offered an auction on the West side (Kailua-Kona) for 42 vehicles in June 2022 (upset price of \$50).<sup>43</sup> Several months ago, County officials began plans to store abandoned vehicles on State land near the site of the closed Hilo Landfill.<sup>44</sup> The County’s Vehicle Disposal Assistance Program (VDAP) allows for two registered cars per year to be disposed of at no charge. The VDAP-Private Property is also available for disposal of cars at no fee.<sup>45</sup>

The Problem: Paperwork to register vehicles, transfer title, and sell derelict vehicles is expensive and time consuming for residents, particularly those who live in rural areas or are socioeconomically disadvantaged. Hawai‘i County “collects” 1,000 + such vehicles each year.<sup>46</sup> According to one survey respondent, the sale of Hawai‘i County’s AVs is done on O‘ahu, where proceeds go into the State General Fund. Rental car companies in the State often recall their cars to Honolulu where they are sold, or ship them back to Hawai‘i Island and sell them as used cars. Disadvantaged people in Hawai‘i County end up paying for used rental cars at inflated prices due to the back and forth shipping of the car, according to one survey respondent.

Possible Solution: Keep Hawai‘i County’s rental cars to be sold on-island , and offer affordable used car prices for residents. Expand the County’s VDAP and VDAP-PP programs to increase the number of derelict cars per person allowed for removal. Increase the number and location of

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<sup>41</sup> <https://ehsdailyadvisor.blr.com/2021/03/tire-recycling-and-the-environment-benefits-and-challenges/>

<sup>42</sup> <https://recyclingequipment.com/shredders/398-tire-shredding>

<sup>43</sup> <https://www.hawaiizerowaste.org/events/auction-of-abandoned-vehicles-june-6-2022/>

<sup>44</sup> <https://www.hawaiitribune-herald.com/2022/04/15/hawaii-news/new-site-planned-for-abandoned-vehicles-facility-would-be-on-state-land-near-hilo-landfill/>

<sup>45</sup> <https://www.hawaiizerowaste.org/recycle/automotive/>

<sup>46</sup> <https://www.hawaiinewsnow.com/2020/03/13/hawaii-counties-struggling-with-costs-abandoned-vehicles/>

AV County auctions. Revisit proposed State legislation, that did not pass, to assist counties with abandoned vehicle disposal. Kaua‘i County pays about \$700 minimum to transport one AV. <sup>47</sup>

The Cost: unknown + labor + land + warehouse facilities.

### ***Scrap metals and white appliances***

Thirteen of the County’s 21 transfer stations offer free scrap metal recycling. Five businesses, located in Hilo (East side) or Kailua-Kona (West side) accept certain scrap metals; some charge a fee. <sup>48</sup> Thirteen transfer stations offer scheduled hours for drop-off of household (“white”) appliances such as, refrigerators, stoves, washing machines, dryers, etc.; excluded are small appliances (e.g., microwaves, blenders, etc.). One business with two locations (East and West sides) accepts appliances. One Hilo business accepts some appliances and fixes them for resale. Microwaves must be thrown into the rubbish bins. All scrap metal and appliances are shipped off-island. <sup>49</sup>

The Problem: End markets are limited on-island for scrap metal and appliances. Everything in this category is currently shipped off-island.

The Cost: TBD + labor + land + warehouse facilities.

### ***Construction and Demolition Materials***

The County does not fund the recycling of construction materials. However, it does contract with a vendor to run the County’s Reuse Centers located at 7 of the 21 County transfer stations. The vendor accepts deconstruction light fixtures, sinks, toilets, cabinets and other materials in addition to clothes, furniture and household goods. <sup>50</sup> An O‘ahu-based non-profit, Re-use Hawai‘i, also has a facility on Hawai‘i Island’s West side (Kailua-Kona). They offer fee-based salvage and deconstruction services. <sup>51</sup> Habitat for Humanity has three Re-stores on Hawai‘i Island that accept used construction materials including lumber, roofing, toilets, sinks, bath tubs, cabinets, etc. Re-stores also sell used furniture, books and household items such as mattresses, dishes and appliances, and have an arrangement with Home Depot to accept unsold products or online purchases that were returned. Home Depot products include bathtubs, sinks, cabinets, etc. They also accept large lots of furniture from hotels and resorts when they remodel.

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<sup>47</sup> <https://www.hawaiipublicradio.org/local-news/2020-03-12/rebuffed-by-legislature-hawaii-counties-seek-solutions-to-mounting-abandoned-car-problem>

<sup>48</sup> <https://www.hawaiizerowaste.org/recycle/scrap-metal/>

<sup>49</sup> <https://www.hawaiizerowaste.org/recycle/appliances/>

<sup>50</sup> <https://www.westhawaii.com/2018/05/07/north-hawaii-news/one-mans-trash-another-mans-treasure-transfer-station-thrift-store-awarded-contract-for-big-islands-seven-reuse-center-stores/>

<sup>51</sup> <https://www.reusehawaii.org>

The Problem: Commercial hauling of construction and demolition debris (C&D), as of 2019, must be taken to the WHSL at Pu‘uanahulu on the west side of the island. Travel time, distance and inconvenience mean that some C&D debris is illegally dumped road-side or in smaller amounts as residential trash at the transfer stations. Nationally, nearly 23% of landfilled solid waste comes from C&D and between 2005 and 2018, C&D waste levels grew more than 10x faster than from 1990 to 2005.<sup>52</sup> With this kind of increase in C&D and the rapid population growth, particularly in the Puna District, the Island’s only landfill will reach capacity sooner than its anticipated life span of 30-50 years.

Inadequate warehouse space to store recovered materials before resale is an additional challenge to recovering materials. For example, replacement of furniture by hotels and resorts is done every ~5 years, making a large supply of furnishings available at one time. These materials are often unfortunately discarded because consumer demand does not match the rate of availability and there is not enough space to store the materials.

Possible Solution: Policies that ban C&D materials from landfilling will spur private sector growth in reuse and repurposing of valuable materials that are currently being landfilled. Another possible solution to recover more materials is construction of shared warehouse facilities on the east and west sides of the island. There is likely adequate space to construct facilities on County-owned property.

Expand the Reuse Center contracts to include its presence at more transfer stations. Require pre-sorting of C&D to identify compostable materials (scrap lumber and drywall), and road construction additives (concrete debris) or back-fill material when crushed; consider County contracts with quarries for such crushing. Work with Re-use Hawai‘i to expand its presence island-wide and elicit feedback from construction industry to identify barriers and solutions to improve recovery and reuse of materials in this sector.

The Cost: Cost of contracts with vendors TBD + labor (to develop facilitate plans and conduct stakeholder engagement) + land + warehouse facilities (construction labor and materials).

### ***Textiles***

There is no County-supported textile waste diversion program. However, the Reuse Centers at four transfer stations accept clothing, linens and stuffed animals. Salvation Army, Goodwill Hawai‘i, church-sponsored thrift stores, and private thrift stores are located around the Island. Most accept clothing, linens and stuffed animals.

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<sup>52</sup> <https://www.bigrentz.com/blog/construction-waste-statistics>

The Problem: Nationally, according to an EPA report with data collected from 1960 to 2018, the U.S. generated 17 million tons of textiles in 2018, recycled 2.5 million tons (14.7%) and landfilled 11.3 million tons (7.7%).<sup>53</sup>

Possible Solution: Separate textiles from landfilling, sort into natural and synthetic fabrics and ship synthetics to a textile recycling company such as BlockTexx. Cotton, silk, wool, bamboo, hemp, and linen textiles can be kept on-island and composted.<sup>54</sup>

Further research to investigate feasibility of using textiles for construction materials.<sup>55</sup> Reuse of textile can also be explored.

The Cost: TBD - Separating textiles made of synthetics from those made from natural fibers would require labor. Once separated, synthetics could be shipped to a company such as BlockTexx that separates fibers in textiles and manufactures new textiles (cost TBD). Textiles from natural fibers would be kept on-island and composted for use as soil amendments by farmers, backyard farmers and gardeners, and grounds crews at County golf courses, parks and facilities.

**Question 6:** *Should EPA consider a phased approach to grant distribution to allow multi-year financing options? If so, please provide detailed recommendations on the phases EPA should consider.*

Yes, a multi-year approach is absolutely necessary when dealing with government entities. Multi-year finance options are appropriate, with an initial year for the County to develop a solid plan by bringing stakeholders together, year two for facilities feasibility studies, and years 3-5 for implementation (Table 2).

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<sup>53</sup> (<https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/textiles-material-specific-data>)

<sup>54</sup> <https://www.blocktexx.com/>

<sup>55</sup> <https://designwanted.com/fabbrick-construction-materials-recycled-textile/>

**Table 2. Example timeline of phased approach**

<b>Timeline</b>	<b>Tasks</b>	<b>Estimated Amount</b>
Year 1	Stakeholder engagement and planning, equipment purchases for pilot programs, work with county council to draft policies, data collection and report preparation on waste composition and diversion	\$500K
Year 2	Facility-specific feasibility studies and siting; introduction and passing of policies	\$500K
Year 3	Implementation of plans for improved collection systems, start construction on improved facilities for post-consumer materials management	TBD - > \$1 million
Year 4	Purchase of processing equipment, ongoing construction	TBD - > \$1 million
Year 5	Completion of facilities construction and equipment installation, start processing of materials	TBD - > \$1 million

**Question 7:** *Should EPA consider allocating the funds to allow for greater number of smaller grants to assist with discreet projects and planning, or smaller number of larger grants to support a more complex investment?*

Allocate for fewer but larger grants for more complex investment. We, as an island state, when possible, need to keep sustainable materials on-island rather than shipping them off-island. Keeping these resources on-island will make it more complex to set up Resource Recovery Parks to handle the diversion of a variety of materials, however, with limited land accessibility, some materials will not be processed on island, e.g. scrap metal.

**Question 8:** *Do you have any additional information that might be considered by EPA in developing future programs to improve post-consumer materials management programs infrastructure?*

Yes. Please provide tool kits that could be used by our County:

- How to offer incentives to businesses to reduce single-use plastic and Styrofoam packaging, and to encourage participation in County’s solid-waste diversion programs
- How to offer waste audits for businesses and organizations to identify ways of maximizing profits while diverting solid-waste from landfilling
- How to identify policy needs and develop strategies to change policy in support of solid-

waste reduction projects

## **Summary**

Hawai‘i County is in desperate need of funding to improve its materials management systems. The Department of Environmental Management is underfunded and understaffed, and development of public-private partnerships may be the most feasible solution to move away from landfilling of materials. The responses to this survey both affirm the desire of individuals, government, organizations and business to solve our waste problem by shifting to a circular economic model that creates jobs and strengthens our local economy, and uplift low-income and disadvantaged communities that are struggling to make ends meet. While a vision is emerging of how we get there, likely the first year or two of funding from EPA will be needed to bring stakeholders together to identify the solutions that meet the needs of the collective, and develop a road map of how to get there. In years 3-5 we will likely request funding to implement the plans that are developed to invest in infrastructure (facilities and equipment).

Mahalo nui (thank you very much) for the opportunity to communicate our County's needs and challenges in the development of this new grant program. We look forward to submitting proposals for funding when the Request for Proposal comes out in the fall.

## APPENDIX A

### EPA Recycling Infrastructure Grant - Survey to Hawaii County Stakeholders

Section 1 of 3

## EPA Recycling Infrastructure Grant - Survey to Hawaii County Stakeholders

Aloha!

The EPA is creating a new grant program that will benefit recycling.

In an unusual however very welcome move, they are asking stakeholders - which is all of us – what improvements are needed for post-consumer materials management (eg. waste reduction, collection, sorting, processing, end-markets for reuse and recycling). Information will be used to develop grant programs that improve recycling infrastructure throughout the country.

The main materials are the usual suspects: aluminum, glass, paper and plastics, as well as food, organics (yard waste, tree trimmings, wood, etc.), textiles, electronics and construction and demolition materials.

NOT qualified for this: Biosolids, hazardous waste and industrial wastes, landfilling, incineration, combustion, and energy recovery technologies.

PLEASE take a few minutes to participate in this short survey. Respondents are not bound to any information submitted in this survey.

Mahalo,

Department of Environmental Management and Zero Waste Hawai'i Island

To receive full consideration for the RFI, PLEASE COMPLETE BY JULY 5th, 2022 . We will keep the survey open for the month of July.

After section 1 Continue to next section

Section 2 of 3

Contact Information



Description (optional)

Email \*

Short answer text

Name or Organization \*

Short answer text

Phone Number \*

Short answer text

After section 2 Continue to next section



Section 3 of 3

Survey Questions



Description (optional)

What best describes the sector that you work in? (check all that apply) \*

- Non-profit
- Community group
- Business
- State or local government
- Legislator
- Individual
- Education
- Other...

Briefly describe what your organization does and how it relates or could potentially relate to recycling \*

Long answer text

---

If you could make money from diverting waste from landfilling, would you be willing to change your behavior/business practices? \*

- Yes
- No
- Depends on the cost to transition vs return on investment
- N/A

⋮

My organization currently recycles (check all that apply): \*

- HI5 - glass, plastic, aluminum
- Plastics (non-HI5)
- Glass (non-HI5)
- Cardboard
- Paper
- Scrap Metals
- Food
- Organics (yard waste, tree trimmings, wood, etc.)
- Textiles
- Electronics
- Construction and Demolition
- None
- N/A
- Other...

⋮

Do you have current or future interest in obtaining a contract with Hawai'i County to divert recyclables or reusables from landfilling? \*

- Yes
- No
- Maybe

What areas do you see are the biggest needs to increase the diversion of solid waste materials from landfilling in Hawai'i County? CHOOSE THE TOP THREE

\*

- Policy
- Staffing
- Planning
- Data needs
- Infrastructure - facilities (warehouse space for storage or processing)
- Infrastructure - equipment
- Improved collection systems
- Waste reduction
- Processing
- Sorting
- End-markets for reuse and recycling
- Minimization of contamination
- Other...

Please describe any socio-economic concerns you have about solid waste management in Hawai'i County.

Long answer text

---

Are you interested in collaborating with the county to apply for an EPA Recycling Infrastructure Grant? \*

Yes

No

Do you have a future program in mind to increase the diversion of solid waste materials from Hawai'i County's only landfill? If yes, briefly describe the project or study you have in mind. \*

Long answer text

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If yes to above, would you be able to provide a business plan or estimated costs for the project? \*

Long answer text

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## APPENDIX B

### EPA Recycling Infrastructure Grant - Survey Responses

Question: "Briefly describe what your organization does and how it relates or could potentially relate to recycling?"

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**Responses: (organization names redacted to preserve anonymity)**

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disorganized retired

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Education, advocacy and system redesign to promote waste reduction

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██████████ is a legacy environmental organization with 30 years experience working with federal, state and county agencies to develop programs that divert waste from Hawaii's landfills and promote the principles of Zero Waste.

---

██████████ will oversee a pilot refillable glass bottle washing service. Recycling glass is one of several solid-waste materials being considered in the Bipartisan grant.

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Sustainability consulting, zero waste event planning and management, waste assessments/audits, research and facilitation.

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Zero waste consulting, recycling hauling services, program development, project investment

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We look for opportunities where the County can improve how community and the economy collaborate for the good of our citizens now and in the future. Recycling is a key element of a lifecycle approach to this effort.

---

The County's Department of Environmental Management currently carries out solid waste and recycling services for Hawai'i Island.

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Our mission is to build affordable homes for home ownership, but we also run 3 ██████████ that are thrift stores for household and building supplies.

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Retail natural grocery store.

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**Responses: (organization names redacted to preserve anonymity)**

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██████████ is a center for learning, and sustainability is an increasingly important focus for our kauhale and the institution.

---

Use of waste material to develop soil amendments and fertilizer

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My extension position within ██████████ has developed the Manager Climate Corps program hosted by the ██████████ campus, which builds adaptive capacity locally by identifying existing professional and community networks on Hawai'i Island and expanding them through manager-driven research projects which directly support local managers' abilities to adapt to climate change impacts on the ground. A major foundation within such work is identifying and growing assets of local sourcing of food, water, shelter, energy, transportation, etc. as a critical approach to adapting to unprecedented social, cultural, and ecological change locally. Recycling is a key component of moving toward sustainable, adaptive lifestyles that must be supported in this critical time alongside growing local resources and assets (vs. being dependent on materials sourced from thousands of miles away....i.e., "cargo culture").

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NW is doing clean up of illegal dumping on Kahakai Blvd & Govt. Beach Rd./Malama O Puna supports reducing plastic waste in particular and recycling of all paper and cardboard, glass & metal. We compost and support greenwaste recycling and composting

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Universities can recycle all sorts of materials from their operations.

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I am an artist who works with recycled materials

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Community service

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We are a community association that could share useful information to help us benefit from county services and programs.

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Created PPE out of recycled medical material

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I work for ██████████ a Hawaiian Immersion school. We are a Hawaiian language and cultural based school. Protecting the 'āina and kai is at the root of our culture. In class we teach about recycling and reusing materials. Through education we will all win.

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**Responses: (organization names redacted to preserve anonymity)**

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I live in Keaukaha

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We run an all-local goods and grocery retail store. We generate a lot of products in various types of packaging, like glass bottles, resealable gusseted bags, and plastic bags. We are interested in reducing our single-use plastics, incorporating more reusable packaging, and diverting whatever we can from the waste stream

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We're a scrap steel recycling company. The things we accept, but not limited to:

Scrap Steel (Junk Vehicles, Heavy Equipment, White Goods, etc.), Junk Tires, etc.

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The [REDACTED] program promotes recycling of all materials in Agricultural Systems

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Quality Recycling Program - All non-hazardous Solid Waste is sorted, repurposed, reused and recycled. Operation maintains a 53% diversion of its gross post-consumer waste from Hawaii County Landfill

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Secondary Education. I teach environmental science and agroforestry, both of which relate to recycling and supporting earth's processes

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Community Reentry Initiative in Hawaii County. Sustainable, safe and healthy communities.

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Food rescue, keeping fresh produce from going to waste by harvesting it from backyards and farms

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We are a family farm generating green waste which we compost.

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I recycle consumer plastic

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Natural food store

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We recently acquired an outdated juicing system that we would like to repurpose to utilize food and ag waste to create microbiologically active fertilizers to increase regeneration of farmable land and to assist in addressing pests and disease recently affecting our crop production and marketability.

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**Responses: (organization names redacted to preserve anonymity)**

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██████████ has a mission to assist justice-involved Hawai'i Island men, women, and youth with reintegration into community life through employment, education, training, and appropriate services. Linking our participants to employment, education, and training upon their release back into our community is a national best practice. Through ██████████ partnerships with local recycling centers, ██████████ could quickly link participants to gainful employment and further educational and training opportunities. This type of employment also allows ██████████ to assist in the recycling industry, which lends to a healthy, resilient, thriving, cleaner community!

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██████████ provides agriculture training to veterans and their families, along with the community. We also provide aggregation and distribution at our ██████████ ) of locally grown produce and sell through our weekly online farmers market ( ██████████ )

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Sets policy for the DEM and for waste reduction in general. Oversees the county budget.

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Mill, roast and ship Hawaiian coffee. We ship and receive products from around the world in the process, which creates a great deal of cardboard, plastic and paper waste. - This year we're opening a public location which may generate additional waste from food, aluminum, glass, etc.

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County Council - development of legislation/ordinances/policy and programs

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Supports communities to be self-sustaining

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I operate 7 reuse centers for the county of Hawaii specifically aimed at diverting reusable items from the landfill.

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We upcycle materials such as plastics and rubber into products sold both in the retail and wholesale markets.

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The organization's goal is to refurbish computers (desktop and laptops) for distribution to the public.

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We interact with merchant in our community to better the environment and sustainable aspects all around

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**Responses: (organization names redacted to preserve anonymity)**

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Educational programs and community outreach as it relates to HOST Park activities and community issues in sustainability.

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Institute of Higher Education

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We are a wildlife conservation organization based on Hawai'i Island and Maui. We pull approximately 17 tons of marine debris off the coastline on the SE corner of Hawai'i Island annually, of which most is plastic (usually floating polymers including polyethylene and polypropylene mixes) and is disposed of in the landfill. We would be open to recycling options that create local products and do not create air / water / energy pollution byproducts that are worse than just landfilling the debris.

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████████████████████ is looking to have a sustainable campus. Recycling would be one part of that goal.

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Provides information to our communities of Pa'auilo Mauka and Kalopa on events and activities of interest to residents and helps to improve conditions in the communities.

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needed since we have no recycling at all available to us except cardboard

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Make and sell wine. We generate a lot of cardboard and glass through retail wine tasting.

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As a homeowner, we generate a considerable amount of recyclable waste.

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Provides services in Hawaii of assorted nature. Also run STVR on my property. If we could eliminate single use containers it would help reduce landfill. I use refillable shampoo and conditioners, laundry soap sheets these eliminate the need to recycle. Ban sale of single use water bottles. Grand Canyon did it and people comply. Every tourists and many locals buy cases of plastic bottle water. Not necessary. The energy to produce and recycle is an issue. I would give my guests reusable water bottles. Keep them out of the ocean, landfill. Emergency use only.

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Service business

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I'm an author and longtime advocate for green living and less waste.

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**Responses: (organization names redacted to preserve anonymity)**

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Farm operation, benefits from green waste mulch greatly

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Private citizen

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We could build computers for the community from recycled e-waste parts, while teaching students in the process.

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Coral preservation- reduction of waste is vital to protect the coral reefs

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Personal recycling

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picks up trash, recycles aluminum and metal--whatever can be recycled

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Retired. Can only recycle hi5, glass and corrugated cardboard

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Property Management

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I don't know what is available here. Everything has disappeared as far as recycling. I take recycles to Volcano or Puna to their organizations.

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I hope organizations in food manufacturing reduced contamination reduce waste and increase efficiency. I always encourage my clients to look at ways to profit from their waste or at least reduce cost while taking the environment into consideration.

---

We work in the tourism industry and work very hard to use and reuse then compost everything else.

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Ocean Tourism

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Farming produce, tourism

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Individual homeowner recycling

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**Responses: (organization names redacted to preserve anonymity)**

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Snorkel and dinner cruises. We have many opportunities to recycle more due to the high volume of waste we have from each cruise, from Vegware cups and other products, cans from drinks, food waste, etc. More recycling options would provide us an alternative to properly dispose of products that could be recycled, rather than adding to the landfill waste.

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████████████████████ is a startup, our goal is to solve problems with green chemistry and engineering solutions. We have team of fabricators, green chemists, engineers and business people with experience solving industrial challenges. Our team can develop scalable equipment and protocols for localized food and other waste to be converted into useful resources.

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Restore and sell used furniture

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We process 100% Hawaiian coconut oil, and have coconut husks and coconut grinds from coconut milk after pressed.

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Encourage neighbor safety and security awareness, cooperation, group projects with ██████████ Community Assn.

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I work with ██████████, which does recycling, HI5 redemption and reuse/resale.

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Our mission is to obtain swimmable, drinkable, fishable waters within Hilo Bay and our Hilo community. We relate to recycling because our outreach and education factors in how our community contributes to human-induced waste within our Hilo watershed.

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Legislative passing policy

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Annually, we divert hundreds of tons of material from the landfill through Deconstruction, a sustainable alternative to demolition, and Redistribution, where we redistribute and sell reclaimed resources to the public.

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## APPENDIX C

### EPA Recycling Infrastructure Grant - Survey Responses

Question: "Please describe socio-economic concerns you have about solid waste management in Hawai'i County"

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#### Responses:

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1) inadequate service coverage 2) operational inefficiencies 3) limited utilization of recycling activities 4) inadequate management of non industrial hazardous waste.....

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A fair and equitable transition requires that salvaged and recycled materials are affordably available. The high cost of infrastructure and rent in Hawai'i County hinders expansion plans.

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A socio-economic concern I have here in Hilo is that there's little to no known data on how the solid waste and it's biomolecular structures are ending up in our local waters where we gather, swim, and recreate- specifically within a pre-dominantly Native Hawaiian community such as Keaukaha. This community is also where most of our gathering and swimming places are in Hilo.

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Accessibility to waste diversion and management services is definitely of concern for many residents on Island. Valuable resources are currently being landfilled.

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After spending 3 years as the County's first recycling coordinator (2003-06) it is quite disheartening to see most of those programs dismantled and limited in scope e.g. paper and plastic recycling, greenwaste composting facility deterred indefinitely by a stroke of the pen on Harry Kim's last day in office, minimal metal and white good recycling options, e-waste recycling limited, transfer station hours reduced...its pathetic.

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Aina

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As an island state Hawaii should be a leader in recycling in the us.

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Cheap food is often packaged in plastic or material contaminated with PFAs. That needs to be addressed.

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**Responses:**

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Don't get me started. What is up with building a multi-million dollar facility in Volcano and then closing the recycling there? What is up with saying we are zero waste and making it nearly impossible to actually recycle anything? or to buy things that decompose naturally. It is a travesty.

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Educating the general public about waste streams and management.

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efforts to use cost to change behavior will have a disproportionate impact on our LMI population

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Hard to change the community's habits and rebuild our current infrastructure. Leveraging proven available technology and allowing the development and growth of low impact light industry, will both increase diversion and generate usable recycled products that will benefit the community. This can be done with current available collection methods and/or with minimal changes at transfer stations.

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Hawai'i County is currently doing a poor job of utilizing the extensive capacities of recycling to divert solid waste from the Hawai'i County landfill and rallying local community support through outreach programs toward such an end.

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I am glad that Hawai'i County is looking into this. [REDACTED] has been recycling everything we can since 1977, however, the vast majority of the public and businesses sectors do not. Education in the school system AND for adults is necessary for this program to succeed. If public is educated on the socio-environmental benefits, they will understand and be moved to recycle because of that, not because of the pennies they'd get for doing so.

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I don't think solid waste management has as much to do about socio-economic concerns as it does with our County's ability to prioritize recommendations in our Solid Waste Management Plan.

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I have always been concerned about the location of the Hilo Landfill in proximity to Hawaiian Homes, residences, agricultural areas. I am concerned about the landfill at Pu'uana'hulu in Kona, as well.

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If we are not able to reuse or recycle the packaging materials that are brought onto the island, then their importation should be reduced or eliminated until we are capable of doing so.

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**Responses:**

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If we create costs or increase costs related to waste diversion and recycling people will not do it, if they have been able to do it for free in the past.

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Interventions are usually expensive and/or time consuming. The burden impressed by recycling on lower socio economic groups has to be addressed

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Investment in Infrastructure and greentech/cleantech should allow socially equitable access to recycling and recovery, job creation, workforce development and educational opportunities. Good, living-wage jobs should be created for the local community - Jobs in transport, warehousing, logistics, sales and business management. Investment in recovery infrastructure drives, and is part of the circular economy ecosystem. Every dollar spent within the local recovery economy, stays on island, and doesn't go to Wall Street investment banks. Investment in infrastructure will also support sustainable and socially focused entrepreneurial and eco-preneur ventures. Many recyclables, once processed and of guaranteed purity, are now a resource which is critically needed as feedstock for other systems.

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It is unfair to place full responsibility on the consumer, who is often overstretched as it is.

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Landfill items should be taxed/ charged to be able to pay for recycling staff, infrastructure, and collection systems/ services

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Majorly current cost to transport and operate landfill

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Most community members are just trying to survive financially and just trying to get by. Most are already overtaxed working, raising families, taking care of loved ones etc. Whatever is created needs to be easy, needs to be accessible and they need to see a value in participating.

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My concern is that lack of environmental planning will cause a sense of apathy and lead to great environmental and economic challenges that will only get more challenging to solve.

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Need a long-term vision that involves diverse stakeholders in developing and implementing an action plan, not only short-term bursts of energy for legislation or funding.

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Need widest possible access, at all transfer stations. People cannot afford to drive far.

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**Responses:**

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None

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Not providing capability to accept: plastics, paper AND food waste. Very disappointed that Hawaii County stopped accepting plastics and paper and have not been proactive in setting up food waste capability.

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Nothing major in my opinion.

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Our rural environments become dumping grounds for materials others cannot find disposal for. For example, tires and vehicles in gulches, because the cost to properly dispose of them is beyond the means of some.

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People do not understand how to reduce their waste and for some reason they think bottled water is better than tap water here when we have some of the best tap water in the world. We need to make the wrong choices more expensive and flood our community with propaganda promoting people to make the right choices.

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Poverty: if people can't get to the transfer station, their homes become the islands rubbish dump. Cars: sending cars to Oahu's auction to make the attorney general more money robs our island's lower income folks of the opportunity to own a low-priced vehicle. Auto disposal: it costs poor folks too much to dispose of a junk, especially if the title is clouded. Nothing leaves an island without \$\$ - they end up in the jungle all the time. How about taking the \$ to ship decent cars to auction and use it to send junks to mainland car crushing operations? Win-win, we get better less expensive used vehicles, and they do not clutter up the landscape.

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Programs at the transfer stations helps folks of all socio-economic categories.

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Recycling should be made easy for our houseless and carless citizens

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Residents in lower Puna communities have to drive long distances to drop off recyclables. Some residents cannot afford high gas prices. HI5 redemption value is not high enough to provide an incentive to recycle. If it were higher, individuals could actually make \$ on collecting & turning in bottles.

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**Responses:**

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Solid waste management really needs to start with the manufacturers who create waste such as single-use plastics and the fact that plastics in an unregulated industry. I fear that without taking this into major account, this problem will be more focused on "cure" rather than "prevention" when the real opportunity to make large change will come more on the front end of this problem. In addition, I fear that residents, business, non-profits and agencies will be too focused on receiving grant funds and there will be a race for money as opposed for a search for viable, sustainable and long-term solutions. In addition, people must have the education on the science of materials in order to actually divert and process solid waste without creating more damage in the way of toxic waste byproducts, heavy use of limited resources such as fresh water, etc.

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The ease of any local resident and/or business to throw away all waste correctly and efficiently

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the food waste is an easy fix, composting, plastic and glass recycled to make new products

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The historic dumping of trash in the unlined Hilo landfill contaminated the watershed and continues to do so with the leachate impacting the local residents (including DHHL leaseholders in the Keaukaha community).

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The landfills and waste management systems have traditionally been located next to, or near to Hawaiian Homelands as well as lower income communities. These communities are already at a high risk of homelessness, teen or underage pregnancy, domestic abuse and do not have the education or resources necessary to resent a well articulated argument and local government is very corrupt so effecting change from inside is almost impossible. Given proper means to self educate, investment back into the health of the local community through processing of our own waste stream instead of shipping the problem away should quickly become a paramount endeavor.

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the more difficult life is for folks, the less they are interested in recycling. There are many folks who are handling socio-economic hardship in Honokaa,

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The states political and economic resources are not evenly distributed to its constituents, economically disadvantaged communities are of equal or greater need of stainability projects but are typically underserved. From road side dumping, abandoned cars, historical and current dumping of industrial hazardous chemicals Hawaii island has significant problems. There is a high level of apathy and lack of enforcement.

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**Responses:**

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There is a fine line between raising the cost of disposal and driving dumping behavior. Huge issue for Puna, gulches etc.

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They really don't want to do it.

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This is an island; we will bury ourselves in our own waste if we don't recycle.

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To partner with the county to develop a sustainable -permanent program to move Hawaii into the future of recycling

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Typically it costs more to recycle than the commodity is worth on island. Usually tied to transportation

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We are an island with limited resources and considerable pollution risks, hence we have to adapt more sustainable behaviors.

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We are concerned about the impacts of ill conceived EPR and waste-to-energy schemes. We seek ways to provide those in need of economic opportunity with access to the valuable resources currently sent to landfills or incinerated.

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We live on an Island, We need to be able to recycle. I would like to see all plastic containers ban and force companies to package in compostable packaging.

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Who is running the show? Is it about money or the environment?

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## APPENDIX D

### EPA Recycling Infrastructure Grant - Survey Responses

Question: “Do you have a future program in mind to increase the diversion of solid waste material from Hawai‘i County’s only landfill? If yes, briefly describe the project or study you have in mind”

\*21 of the respondents indicated that they have or could soon develop a business plan for their proposed project or study

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**Response: (names redacted to preserve anonymity)**

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A network of compost pickup services would be essential to diverting food waste.

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ByFusion's ByBlocks or something of the like AFTER an analysis has been done about the water and energy use per block and a plan to both monitor, and clean, if needed, any wastewater. Another option is Precious Plastics but there are serious environmental impacts with melting plastics (turning solid waste to gas) and adding furans / dioxins and other toxins into our atmosphere. Based on the research we've done, it seems like PP modules do not take air pollution into account and are not doing enough to address this problem. If plastics are burned, it's better just to landfill them.

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Collection bins and education to the community could go a long way. Using our food waste to produce compost could be an incredible opportunity for our county.

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county provided recycling facilities

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Declare Hawaii Island a Pono sustainable Island. Ban plastic water bottles and little shampoo bottles in hotels. Phase in the remaining incentives. Laundry detergent, dishwashing soap and packaging must change. Eliminate incoming plastic.

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Establish a facility to repurpose waste plastic products into blocks suitable to use in construction for retaining walls, storage buildings or even housing. Establish a facility to repurpose used automotive tires into construction material or additives for road construction. Change laws to allow for use of crushed glass in road construction. Use science to determine how to recycle waste paper into other paper products, ie toilet paper. The toilet paper manufacturers need to stop cutting trees for primary purpose of manufacturing into toilet paper.

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**Response: (names redacted to preserve anonymity)**

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Green waste recycling to nurseries; glass for concrete use, cardboard as ground cover

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I am interested in what is available now and what is possible. I hate the idea that all plastic waste goes into the ocean eventually.

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I would like to expand the reuse program throughout the state and assist in eliminating on time use plastic as well as see all one time use items move to compostable. I believe we truly can be a zero waste state.

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I would like to see battery and solar panel recycling. I would like to see improvements to the abandoned vehicle program. I would also like to see expansion of green waste collection and composting programs.

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Increase the number of recyclable bins: glass, plastic, paper, cardboard with staff to enforce bin deposits

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Island facility to collect and repurpose plastics. See precious plastics.

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Just move the existing contract forward to build a composting facility for food and greenwaste. Our current Recycling Coordinator does NOT believe in recycling!

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█ has started a water refill station program. By donating and installing stations in every school we hope to divert millions of single use plastic water bottles from purchase and disposal on our island.

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Let's have a public campaign for community education coinciding with a public school education program with contests.

Let's have a factory on this island that uses recycled plastics to make plastic "lumber", park benches, children's climbing structures, etc.

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more greenwaste diversion

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On site composting

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**Response: (names redacted to preserve anonymity)**

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Outreach that focuses on community/individual authored solutions. This will increase local buy in, which is the major obstacle.

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ramping up the green waste recycling program; converting waste from slaughterhouses to usable compost

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Refillable glass bottle washing service as well as a glass bottle crushing service to produce "clean glass" to use for beach & soil erosion, and landscaping. Both services would divert glass bottles from landfill.

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Require manufacturers to reduce single use plastic packaging

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Reusable container/cup pilot

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Secured a National Endowment of the Arts Our Town Grant (1 of 51 counties selected) to divert plastics from landfill to transform into a new plastic material that will be used to create playground equipment and functional art installed in County parks around the island.

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soil amendments from waste material to replace imported fertilizers

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Sort all biological / greenwaste out of landfill

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sort based on market for recycling and for energy generation

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Students at [REDACTED] recycling ewaste electronics to provide computers for the community.

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**Response: (names redacted to preserve anonymity)**

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The eucalyptus on our Island can be used as building lumber and for producing furniture. It's all hardwood and will last multiple lifetimes if taken care of. Currently we import too many building materials that are not suitable for the tropics and or are made to be disposable and end up in our landfills in 5 to 10 years after purchasing. We need sawmills and tree removal companies combined with carpenters and furniture makers to create these products. We also need mass bulk grocery stores that sell all their products in bulk in which one can bring and fill their own containers for not only food items but detergents and soaps. We need Mass public education programs to inform people how to reduce their waste and why they should reduce their waste. I see way too many cans and bottles get thrown into the garbage. The deposit should be raised to \$0.25 per container.

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Upscale the nonprofit that shred cardboard!

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Use recycled materials for electricity , using incinerator that turns trash into electricity. Already exists on O'ahu. Unless Hawai'i County can get some profit from PUNA GEOTHERMAL to benefit the people too.

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Waste to Wealth concept for justice-involved persons

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We are looking at increasing refurbishment of electronics to redistribute to low-income individuals and families on this island.

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We would like to be part of food waste, soil development

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What I said above: Cars: sending cars to Oahu's auction to make the attorney general more money robs our island's lower income folks of the opportunity to own a low-priced vehicle. Auto disposal: it costs poor folks too much to dispose of a junk, especially if the title is clouded. Nothing leaves an island without \$\$ - they end up in the jungle all the time. How about taking that \$ used to ship decent used cars to the Oahu auction and use it to send junks to mainland car crushing operations? Win-win, we get better less expensive used vehicles, and they do not clutter up the landscape.

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With grant funding our team can develop scalable equipment and protocols for localized food and other waste to be converted into useful resources. For example, diverting cafeteria waste from a local school from the landfill.

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**Response: (names redacted to preserve anonymity)**

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1. Collection & sorting System/ infrastructure 2. Composting Facility on Oahu could be a leading example for Big Island and other islands. <https://www.civilbeat.org/2022/06/its-all-connected-hawaiis-first-large-scale-food-waste-composter-touts-a-host-of-benefits/>

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YES! Expanding our mission impact through construction material salvaging and reuse.

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Yes, a Resource Recovery Park, and education to reduce plastic

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Yes, I would like to collect data on the types of human waste found at the landfill and test any storm drains or outflow pipes from the landfill sites to see what contents are induced into our water resources and if this ends within our bay, rivers, or other water sources in Keaukaha.

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Yes, in fact our business is already processing materials that would otherwise end up in local landfills. From January 2018 to May 2022 [REDACTED] has upcycled/repurposed/diverted 822 pounds and over 60,000 square feet of thin/filmed/sheet plastics from Hawaii Island Landfills. We work with local business and residents to collect waste plastics, rubber and vinyl banners which we then manufacture into final products. Our studio is located in Hilo, Hawaii and we currently have a team of 5 employees. We also process marine debris ropes and nets and have plans to work with more materials in the future.

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Yes, Non Hi-5 Plastic Recycling

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Yes, we would like to partner with like minded groups to create a infrastructure that can help the environment and bring revenue back into our communities

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Yes. As mentioned above, the industrial size of our equipment should be able to provide an impact on scale to help divert local food and farm waste into powerful agricultural inputs and soil remediating microbiological products.

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Yes. I have an entire summary of proposed Infrastructure investment for Hawai'i Island. In short it is the building of small-footprint, low-cost Resource Recovery Parks (One in Kona, One in Hilo). Parks would offer businesses, non profits and residents recycling self-drop, and recycling hauling services. Each Resource Recovery Park (RRP) would accept source-separated, clean-stream materials only. It will not accept mixed recyclables, single stream, or contaminated materials of any kind. They each can process 5-13 tons per hour, and offer a 96-98% containment-free, super high quality yield, which end-users will want to buy directly.

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**Response: (names redacted to preserve anonymity)**

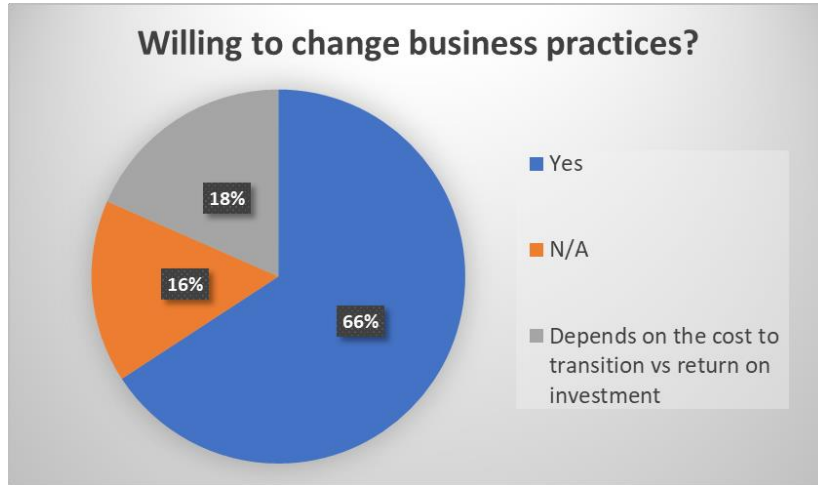
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Yes. We are developing a proposal that will take advantage of Hawaii's remote location and bounded environment to establish a model clean stream collection and processing system that can be replicated in rural areas throughout the U.S.

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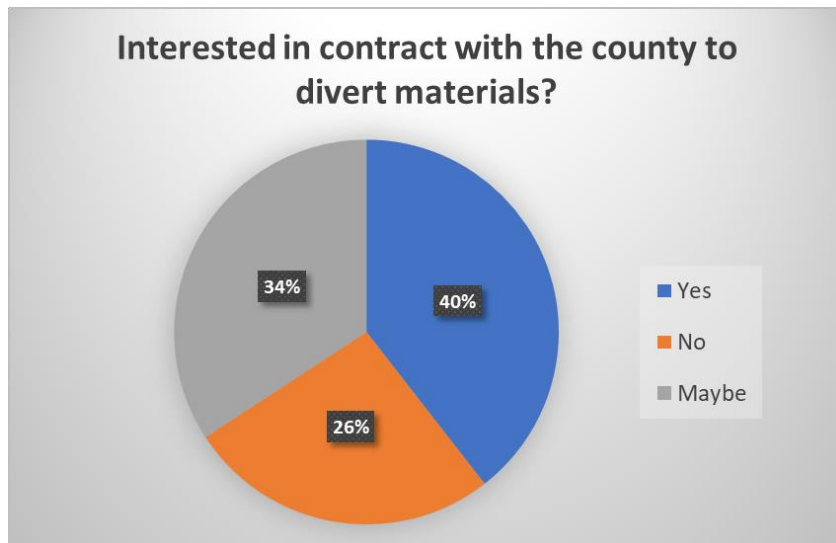
## APPENDIX E

### EPA Recycling Infrastructure Grant - Survey Responses - Short Answers



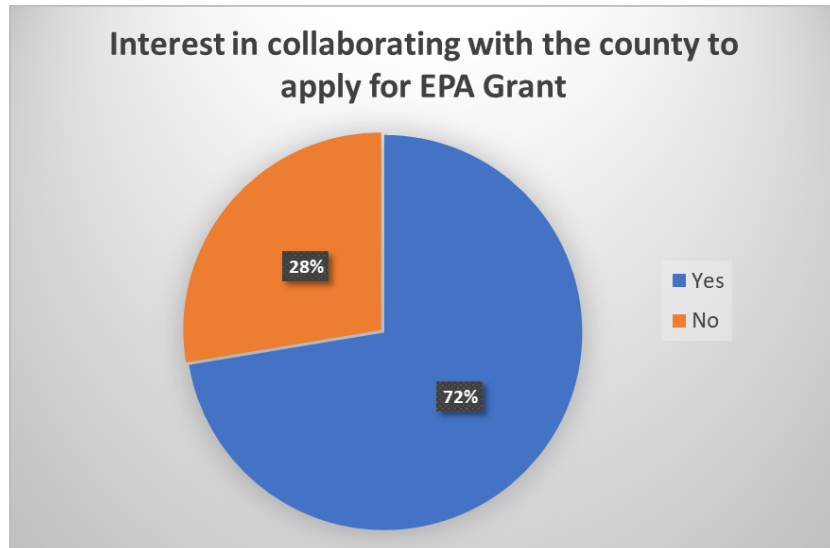
**Question: If you could make money from diverting waste from landfilling, would you be willing to change your behavior/business practices?**

Results: There were 76 responses to the question, no one responded “No”, 50 responded “Yes”, 12 responded “N/A”, and 14 responded “Depends on the cost to transition vs return on investment.”



**Question: Do you have current or future interest in obtaining a contract with Hawai‘i County to divert recycling or reusables from landfilling?**

Results: There were 76 responses to the question; 30 responded “Yes”, 20 responded “No”, and 26 responded “Maybe”



**Question: Are you interested in collaborating with the county to apply for an EPA Recycling Infrastructure Grant?**

Results: There were 76 responses to the question; 55 responded “Yes”, and 21 responded “No”