Hilo Community-Wide Reusable Foodware
Proposed System Design Elements

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Note: Pursuant to the State of Hawai'i's HCR 130 2022, the Hawaiian words used in this document may not be translated within the text. Non-Hawaiian Language speakers may refer to the free online Hawaiian Dictionary at www.wehewehe.org for clarity and understanding.

PROJECT PARTNERS

Zero Waste Hawai'i Island's (ZWHI) mission is to connect diverse Hawai'i Island communities to achieve zero waste. In working to re-indigenize zero waste culture, ZWHI seeks to collaborate with local organizations that relate to ZWHI's six values: kanaka (individual wellness), ʻāina (environmental accountability), akua (interconnectedness), ʻohana (family engagement), kaiāulu (community deferrence), and aupuni (governance through civic duty). In developing the reusable foodware system, ZWHI serves as the local partner responsible for community engagement and outreach.

NO POHŌ is a volunteer project run by Coconut Trader LLC, owned by Ellen Okuma. Their mission is to assist Hilo's locally-owned drink producers reduce costs and waste by distributing refillable glass bottles. With the support of the Perpetual Hilo reusable foodware project, NO POHŌ plans to expand its service to other locally-owned businesses that produce beverages. Collectively, the use of refillable bottles will increase and the number of single-use glass and plastic bottles trucked 90 miles from Hilo to our sole landfill in Pu'uanahulu will diminish.

Hawai'i County, Solid Waste Division, Recycling Section was established to protect, preserve, and enhance our environment by promoting the wise management of our solid waste. Acting Solid Waste Chief, Michael Kaha, has 30 years in the Solid Waste Industry and 8 years in Recycling Industry. There are 3 additional Recycling Specialists with experience ranging from 9-20 years and who have successfully managed innovative materials management projects in the past. They currently hold responsibility for programs such as the Backyard Composting Program, Household Hazardous Waste Program, Reuse Program, Two Bin Program, Deposit Beverage Container Program, and Green Waste Program.

Perpetual is a non-profit organization committed to supporting the design and implementation of city-scale reuse operations that are accessible, equitable, economically viable, healthy and safe, integrated with city planning, and environmentally superior to disposables. Perpetual brings technical and operational reuse expertise together with system design, stakeholder engagement, and project management experience to drive the process from design through implementation. Perpetual is working with four small municipalities around the US to stand up city-wide reuse systems.

HOW WE GOT HERE

The beginning of this work and the collaboration between Zero Waste Hawai'i Island (ZWHI), Perpetual, and Hawai'i County can be described using **'Ōlelo No'eau # 117: *'Anihinihi ke ola. Life hangs by a thread. Life is in a precarious position.*** According to Census data, Hawai'i Island is home to 200,000+ residents and 15,000+ commercial businesses, and is frequented annually by upwards of 1.5 million tourists. The solid waste ("trash") generated by each of these communities are compiled and dumped at the only remaining landfill on the island located in Pu'uanahulu, Kona. There is an urgent need for waste reduction on Hawai'i Island.

Recognizing this need, ZWHI, whose mission it is to *engage diverse Hawai'i Island communities to achieve zero waste*, applied to collaborate with Perpetual to develop a reusable foodware system with and for Hilo. Perpetual, an organization with a mission to support cities to develop reusable foodware systems, agreed to work with ZWHI; there is suitable landmass, a city-like economy, and an existing culture of environmental accountability (kuleana/aloha 'āina) built into Hilo's culture, making Hilo a suitable location for collaboration.

Following initial baseline workshops yielding a consensus that a reuse system was desired and necessary for Hilo, Perpetual and ZWHI solicited the support of the County of Hawai'i's Department of Environmental Management to apply for funding from the US Environmental Protection Agency (EPA); this funding was awarded in 2023. We have since sought (and are actively seeking) community feedback on the system design, as we are now in spaces of collaboration toward the development of a reusable foodware system that is functional for the Hilo community.

Thus far, the community engagement process for this project has engaged 38 stakeholders and potential partners (e.g., business owners, nonprofit executives, education administrators, County Councilmembers) in 1-on-1 or small group meetings. Outreach has been conducted at 22 events engaging approximately 726 community members and included a workshop held to involve Pacific Islanders and Native Hawaiians in recognition of cultural connections to the reusable foodware project. A series of workshops were held in Hilo between October 24-28; they were advertised on the radio, through social media channels, and shared widely on email listservs. Flyers to these events were also shared at meetings held by the Department of Hawaiian Homelands and at association meetings. An online survey is actively collecting continuous community input at https://bit.ly/ReuseSurvey.

Between January 15 to March 7, 2024 the project's team began its system design process with public design discussions. Click **here** to view recordings from the system design meetings and click **here** to check out our website for more information about the system design process and associated materials or visit https://linktr.ee/perpetual_hilo for these links.

'Ōlelo No'eau # 327: E lauhoe mai nā wa'a e; i ke kā, i ka hoe, i ka hoe, i ke kā; pae aku i ka 'āina.
Pitch in with a will, everybody, and the work is quickly done.

ZWHI: COLLABORATIONS TO RE-INDIGENIZE ZERO WASTE CULTURE

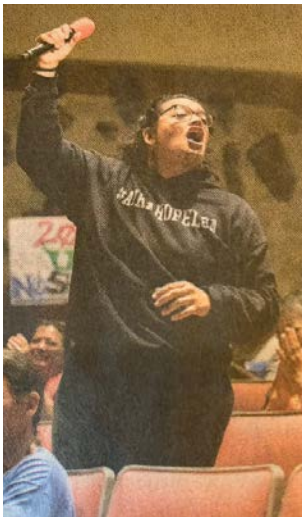
As we dive in to the System Design Process, let's take a closer look at the foundations of Zero Waste Hawai'i Island (ZWHI). As an organization, we believe that zero waste is a byproduct of the restoration of indigenous practices like pilina ʻāina (kinship to land), kuleana (responsibility), and mālama ʻohana (family care). We stand firmly in our commitment to re-indigenize zero waste by helping folks to remember that it is not a foreign idea; zero waste is a result of us returning to the piko (center) of who we are as people who are intricately connected to the earth. We believe that these concepts align well with much of the Hilo community, and that sharing this belief will support the widespread acceptance, utilization, and success of the reusable foodware system. The system design process will be aligned with ZWHI's Mission, Vision, and Values.

MISSION
To engage diverse Hawai'i Island communities to achieve zero waste.

VISION
To create more opportunities for kanaka ʻāina akua leadership (leadership based on the relations between humans, land, and Spirit) through the restoration of family systems, community systems, and equitable policy.

VALUES
Here, Zero Waste Hawai'i Island's Vision is broken down into action-oriented values that ensure that we are responsible stewards of the work we do. The image and philosophy below is inspired by the Honua Mauli Ola framework of the Ka Haka ʻUla o Keʻelikōlani College of Hawaiian Language's *Kumu Honua Mauli Ola*.

- **KĀNAKA: INDIVIDUAL WELLNESS**
- **ʻĀINA: ENVIRONMENTAL ACCOUNTABILITY**
- **AKUA: INTERCONNECTEDNESS**
- **ʻOHANA: FAMILY ENGAGEMENT**
- **KAIAULU: COMMUNITY DEFERRENCE**
- **AUPUNI: GOVERNANCE THROUGH CIVIC DUTY**



ʻOhana and Akua at Puʻu Huluhulu, Kaiāulu in Panaʻewa, Aupuni in Hilo - Photo Credit: K. Kuulei Kanahele

ZWHI: COLLABORATIONS TO RE-INDIGENIZE ZERO WASTE CULTURE

KĀNAKA: INDIVIDUAL WELLNESS

Adopting a zero waste lifestyle requires an individual to assess and address their own spiritual, mental, physical, and financial capacity to participate in systems like reuse and reduction. Therefore, we concern ourselves with the wellness of the individuals we serve. The re-indigenization of zero waste culture calls for us to work closely with health and wellness organizations, events, and resources, which we will strive to do in the upcoming year.

ʻĀINA: ENVIRONMENTAL ACCOUNTABILITY

Professing our love for the beauty of Hawai'i is not enough on its own; our actions of care and sustainability must follow. Developing true regard, not just for general ʻāina (land), but for specific mountains, rivers, oceans, and land features of Hawai'i Island is a step toward increasing our capacity to model that affection with environmentally responsible habits, routines, and actions. The re-indigenization of zero waste culture calls for us to work closely with place-based individuals, organizations, programs, and events that foster kuleana (responsibility) to Hawai'i Island places, which we will strive to do in the upcoming year.

AKUA: INTERCONNECTEDNESS

"Hawaiian gods" are traditionally represented by nature and natural phenomena. The word "akua" also translates to mean "microbe" as those in fertile soil. The re-indigenization of zero waste culture calls us to collaborate with systems of spirituality that are conducive to intentional living, interconnectedness, and joy through the connection we have to our environment, our soil, food, and forest systems. In the upcoming year, we will strive to engage these collaborations through our EA (Eat ʻĀina) Workgroup, dedicated to indigenous culture, farming, and education.

ʻOHANA: FAMILY ENGAGEMENT

The ability for an individual to sustainably adopt a zero waste lifestyle largely depends on the capacity their family has to participate alongside them. We strive to support the family unit to be restored to a nohona (way of being) of health, presence, connection, and the ability to bring value to their communities. We endeavor to lend education and support to a minimum of 100 families/family representatives in the upcoming year.

KAIĀULU: COMMUNITY DEFERRENCE

We look to the multigenerational dwellers of each community as experts, and defer to their experiences to guide the mobilization of each community to restore the indigenous knowledge systems of each ahupuaʻa/ʻili ʻāina (land division). While this type of consultation is innumerable and priceless, we are hopeful for their openness to huipū (join together/connect) and we are preparing to seek their counsel in a way that will honor their lineage and experience while compensating them fairly in pay.

AUPUNI: CIVIC DUTY THROUGH GOVERNANCE

As our original mission intimated, we maintain our commitment to be active and involved in policy initiatives. While many indigenous communities are familiar with the process of defending land and practices in engaging with the "government", we hope to encourage our communities to be involved in the processes of our "governance", extending beyond our political engagement to exercise the ea of our lāhui (nation), our ʻāina aloha (beloved land), and our sovereign conduct.

ZWHI VALUES & THE HO'OPILI 'ĀINA GATHERING

In alignment with our values 'OHANA, KAIĀULU, 'ĀINA, and AKUA, we initially held a workshop for the 'ōiwi (indigenous) families of the Hilo area, which engaged cultural protocol, safe space, and foods that were intentionally gathered and prepared for the gathering. Honest reflections were shared regarding a reusable foodware system in Hilo, along with much regard and concern for 'ĀINA. The following list includes specific feedback that was shared at this gathering.

GENERAL FEEDBACK

- We support reuse; we don't support more trash in Hilo.
- Many people are "set in their ways" - we should "start small" with a system of cups to ensure that people can get into the habit of returning the used item to a bin
- We need to be able to use the "bring-your-own" system at restaurants
- We need to take responsibility for our own waste by continuing to engage in conversations and work surrounding the concepts of "less is more", aloha 'āina 'oia'i'o, and slower lifestyles that allow for home cooked meals and washing dishes.
- We need to recenter "zero waste" to include kanaka-'āina-akua connections, and disrupt our relationship to waste by restoring our relationship to cultural practices.
- We are interested in local ownership of containers and the ability to maintain the materials and dispose of them appropriately at their end of life.
- We are interested in natural biodegradable materials that can withstand sanitization and multiple washes over time.

CULTURAL WORLDVIEW

- We're trying to centralize systems that should be imposed at an independent household level, as these type of systems are hard to start and hard to get going. We should start kids young and teach them how to recycle and live simply.
- We should look into recycling local plastics.
- (I feel that) creating a composting system would be better than a reuse system.
- We need to change Dept. of Health regulations to allow BYO containers to restaurants
- We need to consider that fossil fuels will be used by transport vehicles collecting foodware

There was initially some hesitation and uncertainty surrounding the idea of a reusable foodware program in Hilo, but after weighing the pros and cons during the workshop discussions, consensus was reached in support of moving forward. It is because of this initial consensus that we are confident to proceed in this work. We are grateful to these individuals and family members for their willingness to sit and share their insight with us, and we will continue to highlight these significant contributions in the "Community Perspective" portions of the System Design Document. For a complete presentation on the Ho'opili 'Āina Gathering, please visit http://tinyurl.com/hoopiliainareport.

Individuals, families, and volunteers present at the *Ho'opili 'Āina Gathering* in Hilo - August 2023

VISION: THE HŌKEO HO‘IHO‘I

(reusable food/drinkware program)

Let‘s take a second to imagine the most beautiful part of Hawai‘i Island. For some, it's Mauna Kea, for some, Lokoaka or Hilo One. Now imagine all of Hilo Bay from Suisan to Kaipalaoa, fully covered with ‘ōpala: plastic clamshell plates, styrofoam bowls and cups, plastic “compost-able” forks and spoons (which aren't compostable in Hawai‘i by the way) - towering 50 feet high above our beloved Hilo town. *Pō Hilo i ka ua Kanilehua* - what grief! It‘s a similar real-life threat for the people of Pu‘uanahulu, where the last operating landfill on Hawai‘i Island remains. The lava fields of Pu‘uanahulu bear the weight of all of our trash. From Na‘alehu to Pana‘ewa, Laupāhoehoe to Kona and beyond, our trash is trucked daily to Pu‘uanahulu.

Now imagine each person on Hawai‘i Island having an opportunity to drastically reduce that trash. Imagine a community of folks working together to mālama ‘āina, by making a simple choice to switch to the reusable. The same ‘ono beef lū‘au plate, the same ‘ono Ola Burger, the same ‘ono boba with popping lychee, but no rubbish. Here's how it works.

As you order your mea ‘ai (or mea inu!) you borrow a cup or dish that holds your food or drink securely. When your meal is pau, you return the cup or dish to one of the bins placed around town, where it's picked up, washed, and sanitized, to be used again and again.

Hōkeo Ho‘iho‘i (reusable foodware programs) can offer a better and healthier eating and drinking experience, reduce waste and litter, create local jobs, keep more money in the local economy, reduce the toxic emissions associated with extraction, transportation and manufacturing of single use plastics, and deliver reductions in net greenhouse gas emissions.

Our vision is of a community-scale reusable foodware and refillable bottle system in Hilo, Hawai‘i that is designed by and for the whole community, reflecting the culture of Hilo. Once this system is up and running, we envision it to be expanded island-wide and to additional reusable/refillable packaging formats.

If you could easily borrow and return reusable cups and containers every time you got food or drinks to go, at no cost to you as long as you returned the item, would you do it?

Photos of the Landfill at Pu‘uanahulu - Photo Credit: K. Kuulei Kanahele, Jan. 2024

INITIAL SCOPE

This project is funded by a combination of private foundation grants and federal grants. Private foundation funders include The Overbrook Foundation, the 11th Hour Project (a program of The Schmidt Family Foundation), the Plastic Solutions Fund, and the Walmart Foundation and primarily fund staff time for Perpetual and ZWHI, community engagement, modeling and analysis, travel, and the development of comprehensive public resources. The federal grants include:

- **EPA's Solid Waste Recycling Infrastructure Grant:** $1.5 million awarded to County of Hawai'i to support infrastructure (transport vehicles, return bins, dishwasher, and tracking technology) for the reusable foodware program.
- **EPA's Pollution Prevention Grants:** Environmental Justice Through Safer and More Sustainable Products: $622,000 awarded to UH SEA Grant will provide funding technical assistance and equipment to local businesses, schools, and community organizations that provide meals, to enable them to make the transition to the reuse system.

Due to the nature of grant funding, certain facets of the project's scope are predefined by the diverse set of grant requirements. Key aspects shaping this design process include: the project must yield a community-wide reusable foodware system (cups and/or containers) and the project must follow federal competitive procurement requirements in the disbursement of funds.

CONSIDERATIONS

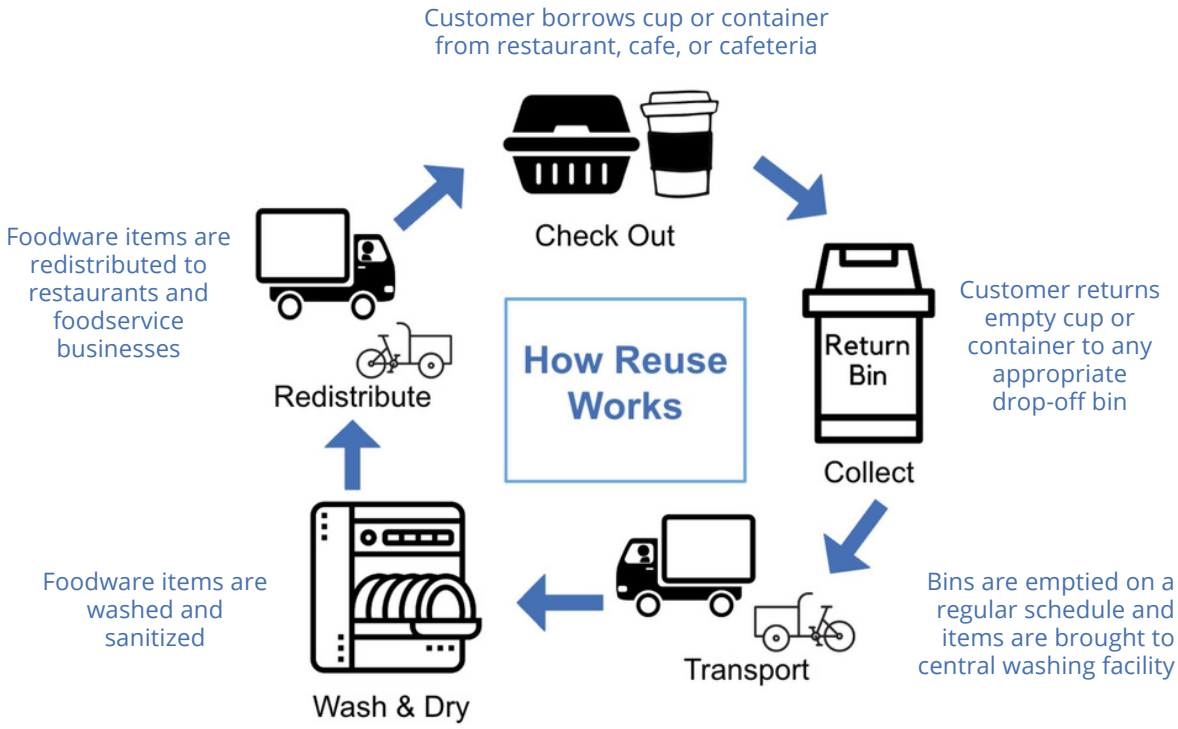
- While this system will initially start with reusable foodware (cups and/or containers), we anticipate expanding the system to accommodate refillable bottles, local food packaging (ready to eat/ready to heat meals, packaged food sold at retail), dine-in foodware service, and other reusable/refillable packaging formats. This will likely be done in phases over the course of 5 years. The phasing and timeline of this is dependent on the successful launch of the initial system and securing funding to expand the program.

- The role of Perpetual and Zero Waste Hawai'i Island (ZWHI) is to activate the capacity for individuals, communities, businesses, and government support systems of the Hilo area to maintain their (our) own agency and governance over the reusable foodware system that is to be developed. Neither organization plans to facilitate or operate the system independently.

- We recognize that some may prefer the Bring-Your-Own (BYO) option and share the belief that in many situations, this is a viable option. We strive to always encourage this option where it is allowed by Department of Health (DOH) while also offer a convenient alternative for people who do not wish to bring their own container or when BYO is not allowed by DOH.

- We recognize that environmental accountability is expansive, and neither starts nor stops with a reusable foodware system. Within and in addition to this work, ZWHI continues to maintain our existing kuleana to embody our organizational values (kanaka, 'āina, akua, 'ohana, kaiāulu, aupuni). If you are interested in joining our Eat 'Āina (EA) Work Group focused on farming practices, indigenous activation, and community engagement, please contact K. Kuulei Kanahele at kuulei.zwhi@gmail.com or (808) 940-6989.

HOW REUSABLE FOODWARE WORKS



SYSTEM DESIGN CRITERIA

Expert design that deeply considers all interrelated elements both of the physical system and the community itself is essential for success and scalability.

Economics

- Cost neutral to consumers
- Comparable to cost of disposables
- Self-sustaining program

Environmental Impact

- Minimize Greenhouse Gas (GHG) impact through renewable energy
- High efficiency washing
- High return rates

Health and Safety

- Safe containers / cups
- High quality assurance washing systems
- Well managed operations

City planning / implications for city resources

- Coordination with relevant agencies
- Locate return bins where people live, work, and recreate

Equity and Accessibility

- Design system for everyone
- Options to use without a smartphone, credit card or bank account

PRICING AND ECONOMICS

KEY ASSUMPTIONS

- Businesses offer customers the option to choose a reusable item. Most businesses will continue to offer both reusable and disposable options.
- Technical assistance will be provided free to businesses to get them set up to participate in the reuse system (supported by grants).
- Businesses pay a per use fee for every cup or container used (more on revenue model on page 13).
- There are no other fees for participating businesses (e.g., delivery fees, etc).
- The cost of system operations is covered by the revenue from per use fees.

This program aims to align with current cost of disposables (based on median cost of each container type) to ensure that the program is feasible for businesses. Following container selection, more specific cost estimates will be shared. The program continues to seek funding opportunities to support businesses' transitions to reusables.

INFRASTRUCTURE INVESTMENT (ROUND NUMBERS)

Asset	**Amount Needed**	**Amount Secured**	**Notes**
Reusable containers	X		Starting inventory of X
Reusable meal trays for schools		$30,000	Funded by P2 Grant
Collection racks for trays		$10,000	Funded by P2 Grant
Reusable assets and transport bags for community meals		$92,000	Funded by P2 Grant
Storage system for businesses, community orgs, and schools		$15,000	Funded by P2 Grant
Dishwashing facility - leased	$240,000		2 year lease at $4,000/month
Dishwasher - fully installed		$736,000	Funded by SWIFR Grant
Collection bins - fully installed		$531,500	Funded by SWIFR & P2
Tech platform - license		$150,000	Funded by SWIFR Grant
2 transit vans		$79,230	Funded by SWIFR Grant Ram ProMaster City Cargo Van
Additional supplies		$10,650	Scanners, transit totes, etc.
Shipping equipment and supplies		$25,000	Funded by SWIFR Grant
Legal and administrative		$50,000	Funded by SWIFR Grant
TOTAL	**$240,000**	**$1,729,380**	

*Note: Grant budgets are subject to modifications.

SYSTEM DESIGN PLAN OVERVIEW

The system design for Hilo has been informed by extensive research and engagement in the Hilo community itself. The recommended design takes into consideration the community's physical as well as social assets. A team from the University of Georgia conducted their Circularity Assessment Protocol in Hilo, documenting the existing waste systems and confirming Hilo as a strong candidate for a reuse system. Proposed asset placement and routing have been informed by a team of data scientists at the University of Chicago and an environmental life cycle assessment was completed by experts at the University of Michigan. Each element of the system and the system as a whole have been evaluated to provide an effective and seamless experience for businesses, community members, and tourists.

This document will serve as the Hilo system design plan which incorporates input gathered from community and stakeholder workshops, knowledge from the reuse industry (to ensure alignment with current industry capabilities), and continued engagement with representatives from disadvantaged communities. This plan outlines the framework for a reuse system, addresses crucial aspects such as costs for businesses, strategic locations for collection bins, governance model, the types of containers to begin with, and more!

As we moved forward, we invite the community to continue to participate, provide input, and offer feedback on this evolving plan over the next few months. Community engagement throughout this process is integral to ensuring that the final system was well-rounded, effective, and reflective of the diverse needs of our community. Community feedback will be incorporated into later drafts and a final version of the system design plan is expected June 2024.

The following recommendations are additionally informed by our team and advisors' design and operational expertise as well as market ready options available from reuse service providers.

ELEMENTS OF REUSABLE FOODWARE SYSTEMS

Foodware with unique ID

Photo credit: Usefull

Photo credit: Dispatch Goods

Technology

Photo credit: Bumerang

Photo credit: Quppa

Forward & Reverse Logistics

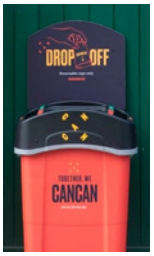


Photo credit: CanCan

Photo credit: r.Turn

Washing Facility

PLUS: Governance, communications, messaging, behavioral nudges, incentives

SUMMARY OF RECOMMENDATIONS (1 of 2)

REVENUE MODEL

Utilize a **Businesses Pay per Reuse Model** and offer a lower per-use cost for high volume usage.

SCOPE

Start with containers only, then expand to other packaging formats when ready.

REUSABLE ASSETS

Offer a mix of small and large foodware containers with a focus on bento box and single-compartment containers. Material options will be identified in later document iterations based on market availability with a preference for glass or stainless steel.

Use **very simple universal branding** for the containers that does not make them an attractive souvenir.

TECHNOLOGY

For **frontend technology, adopt the "seamless checkout" model**, which uses RFID/QR and links the reusable item with a user's credit card, allowing for a later charge if the item is not returned to the system. The system does not collect any other personal information from the user. Users have the option to download an app and link their credit card to their profile to receive return reminders and rewards.

For those who do not have a credit card or prefer using cash, the program will offer RFID enabled tokens such as a keychain or card that can be prepaid with cash and used for the checkout process. Individuals that participate in government benefits programs may be able to receive prepaid cards through those programs at select participating locations.

For **backend technology, license an asset management platform**. This platform is the central repository for all asset management data. Reuse service providers operating other parts of the system would be able to use and communicate with this database, while protecting data privacy.

RETURN INCENTIVES

Reuse should be free to users as long as user returns the reusable item. To this end, use a **check-out model that allows users to check out reusable items for free and be charged a Non-Return Fee** for the reusable item if it is not returned within the allowed time. **Proposed maximum time to keep an item is 1 week.** Participants may request an extension to the return timeframe if needed. If an item is returned at a later date, they will be reimbursed for the charged value of the item, minus a processing fee to be determined.

Assign a **redemption value to reusable items of $0.15 per item** to be paid to people who collect abandoned items and return them to a redemption location. Items that have been checked into a bin will not be eligible for redemption, to discourage theft. People whose items are returned through redemption will be charged $0.25 to cover the cost of the redemption and redemption process.

SUMMARY OF RECOMMENDATIONS (2 of 2)

COLLECTION - BIN DESIGN AND MANAGEMENT

Deploy 75-100 outdoor bins at launch, using a mix of tech-enabled and non-tech collection bins. Participating businesses will be encouraged to have an indoor collection bin.

COLLECTION - LOCATIONS

Collection bin placement is based on analysis from data science partner and input from community workshops. Ground truthing will be done to proposed bin locations.

Establish ~3 redemption sites in Hilo. These sites should be located in places that are easily accessible to people who commonly collect other items with redemption value, such as bottles and cans.

WASHING

Establish a new wash hub per the noted specifications in a centralized location.

REVERSE AND FORWARD LOGISTICS (RFL)

Mobilize a mix of electric vehicles (cargo bikes, trucks, vans, etc.). Data science partners will **optimize logistics for cost and environmental impacts** through modeling. Integrate with existing systems to increase convenience of the system and maintain high return rates for community members who may reside outside of Hilo's main area.

LABOR

All reuse system jobs will **pay a living wage and provide health care benefits.** Partner with local workforce development programs to offer employment opportunities to disadvantaged people.

SURGE PLANNING

While Hilo sees a strong tourist flow, the average monthly visitors is fairly steady throughout the year. The Hilo reuse program will regularly accommodate influxes during days cruise ships are at port thus, the system will need to **have sufficient assets available to accommodate** this volume.

GOVERNANCE

Explore governance model options with County Government to determine best path forward to manage program.

REVENUE MODELS: RECOMMENDATION

RECOMMENDATIONS

Utilize a Businesses Pay per Reuse Model and offer a lower per-use cost for high volume usage. The program will leverage the EPA Pollution Prevention funding to offer technical assistance to businesses and incentivize their participation. Over time, the revenue model will be revisited to determine the possibility of aligning with a Utility Service Model.

REVENUE MODELS: BACKGROUND

Models that describe how the reusable foodware system service is paid for.

BUSINESSES PAY PER REUSE

Businesses pay a per reuse cost each time they use a reusable item

Pro: This is the closest to a 'drop in' model because businesses pay "per reuse" just as in the current model businesses pay a per unit cost for disposable items. The amount that businesses pay today varies greatly depending on the material and quality of the items they are buying. As a design principle, the per reuse cost would be kept to no more than about 10% more than the per item cost of most disposable foodware items. At scale, the per use revenue would cover the cost of the system and a modest profit margin for the operator(s).

Con: At small scale, the revenue from per use fees will not be enough to cover all reuse system costs, and will require start-up subsidy funding. Businesses may perceive the billing amounts as unpredictable (though these are costs that they currently frontload by purchasing large stocks of disposables).

MONTHLY FEE FOR BUSINESSES

Businesses pay a flat fee, based on usage tiers, rather than per use.

Pro: Some businesses prefer the predictability of knowing what their cost will be rather than having it vary.

Con: Unless they are at the very bottom end of the price range in terms of usage, then they are by definition over-paying for the service, which works against our objective of affordability for businesses.

CONSUMER SUBSCRIPTION MODEL

Consumers pay a monthly fee, often in the range of $20/mo, to be able to use reusable takeout cups and containers, typically limiting the consumer to a max number of items checked out at any one time.

Pro: This model may provide a consistent and predictable revenue stream and a group of consumers who are likely committed to responsibly borrow containers and return them to the system.

Con: This puts the cost on consumers, which is not inclusive or equitable and limits the ability of the system to get to scale.

"BAD BEHAVIOR" REVENUE MODEL

Reuse system relies on late fees, surrendered deposits, and other penalties as a key revenue model.

Pro: Reuse systems frequently experience lower return rates initially, while simultaneously grappling with substantial upfront expenses like washing infrastructure and container costs. This system can take advantage of consumers not returning and leverage this income to support the system's costs and revenue.

Con: This model provides a financial incentive to the system to not encourage returns. Items being taken out of the system erodes environmental benefits and may even lead to creating more waste compared to disposables.

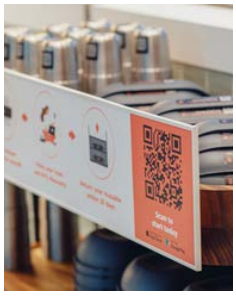



Photo Credit: Perpetual and So Juicy Hawaii

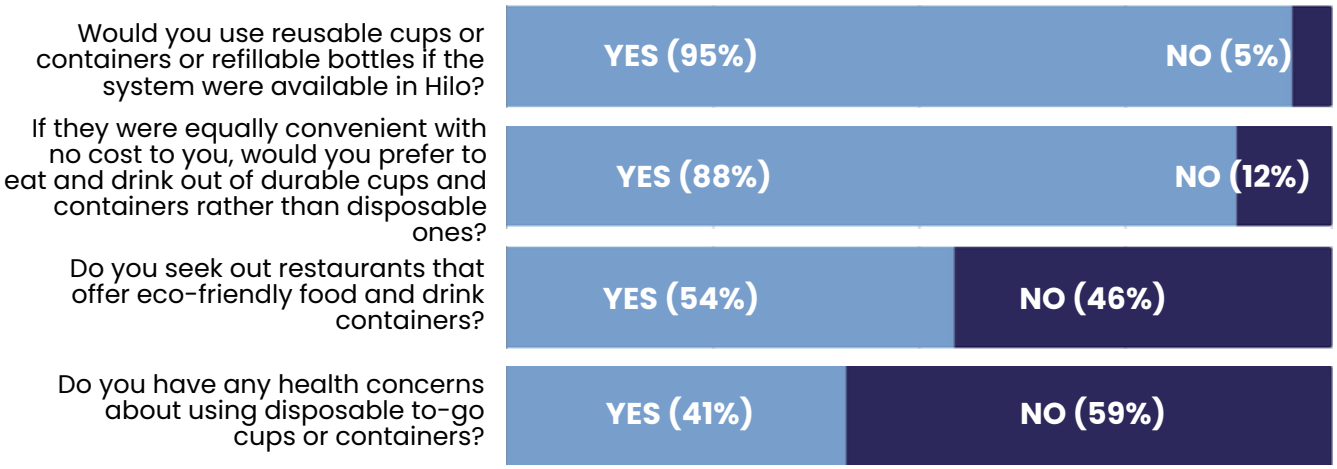
REVENUE MODELS: BACKGROUND (CONTINUED)

UTILITY SERVICE MODEL

Similar to a municipal recycling service, government uses taxpayer funding (either in general or through a fee for service) to pay for the reuse service.

Note: This model is not appropriate for the Hilo demonstration project at this time. This revenue model option would require the County to allocate/raise taxes to pay for the service, which is a significant challenge, and is something that community members had expressed disapproval about. As waste is reduced, the County should see cost savings in waste hauling, so this could be revisited down the road.

INSIGHTS FROM COMMUNITY WORKSHOPS



The majority of workshop participants expressed interest in being part of a reusable food/drinkware system, and verified that they do seek out restaurants that have eco-friendly food and drink containers. One notable indigenous perspective is that though a reusable foodware system is ONE method of waste reduction, it cannot be the ONLY method, and must be combined with personal belief in the system and environmental accountability.

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

- One fee makes it fair for businesses that are just starting out
- Businesses would need to be incentivized to use more reusables (lower costs for higher volume)
- Program must incentivize businesses to participate
- Would like to see program transition to utility model over time

SCOPE: RECOMMENDATION

RECOMMENDATION

Based on current volumes and packaging usage, for Hilo's initial citywide launch the recommendation is to **start with containers only.** Expand to other packaging formats when ready, approximately six months to one year after the system's initial launch.

SCOPE: BACKGROUND

*Decision: With which type of item - cup, jar, or container - should the system **start**?*

CUPS

Pros:

SIMPLER LOGISTICS AND WASHING

- Uniform size and shape, making them easier to store, transport, and wash.

HIGH VISIBILITY

- Due to their frequent usage in various public settings, cups are more visible in everyday life and offer an excellent opportunity to reinforce the new social norm of reuse behavior.

HIGH IMPACT ON LITTER

- Cups are commonly used for beverages consumed on the go, leading to higher rates of littering.
- The nature of cups facilitates refill applications, such as fountain drinks.
- When designed with suitable lids, cups can also reduce the need for straws.

Cons for starting with cups: Not aligned with Community Nutrition Programs that will be starting with containers through Pollution Prevention grant

REFILLABLE JARS

Pros:

STRONG INTEREST FROM COMMUNITY AND LOCAL BUSINESSES

- We have heard through outreach that many stakeholders are excited about the possibility of the reuse system using refillable glass jars/wide mouth bottles for locally bottled drinks.

SUPPORTIVE OF LOCAL FOOD SYSTEMS

- The system would provide local food and drink-producing businesses with a more sustainable packaging option.

FAMILIARITY

- Refillable bottle programs are used in many part of the world and may be familiar to some.

Cons for starting with jars: There are no reuse return bins that exist today that can accommodate both glass and other materials efficiently, so glass would be return to store only.

CONTAINERS

Pros:

WIDELY APPLICABLE

- Due to limited dishwashing capacity, many restaurants in Hilo use disposable containers for all orders, including dine-in. Starting with reusable containers would give them a solution first.

COMMUNITY NUTRITION PROGRAMS

- Schools and non-profits serving food that are participating in the project through the EPA Pollution Prevention grant will likely start with containers given their specific needs. There could be benefits in washing and logistics efficiency from aligning the public system's choice of starting item with these programs, though the nutrition programs will be semi-closed systems.

Cons for starting with containers:

- Restaurants/foodservice businesses often require multiple containers to fulfill orders (bowls, clamshells, ramekins, etc, in various sizes) which adds logistical complexity at the start.
- Food containers are not as noticeable as cups and often used in the car or at home, so it may be harder to notice the level of uptake of reuse from a social norm perspective.

SCOPE: BACKGROUND

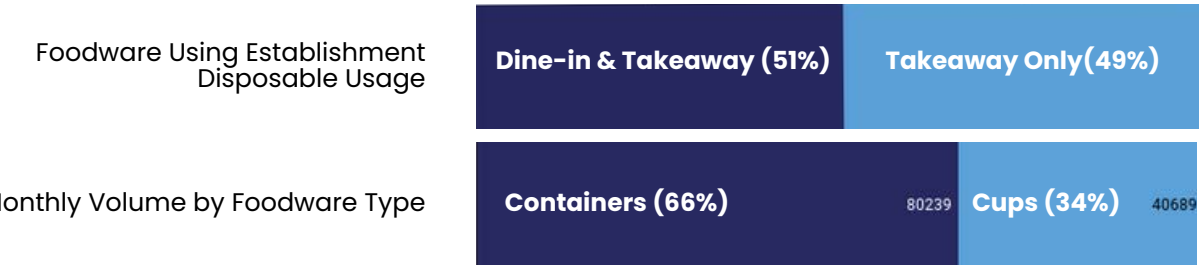
*Decision: With which type of item - cup, jar, or container - should the system **start**?*

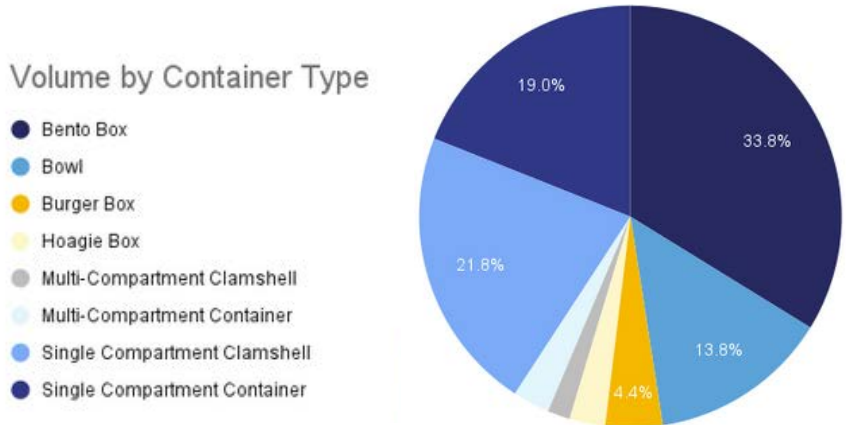
RELEVANT DATA

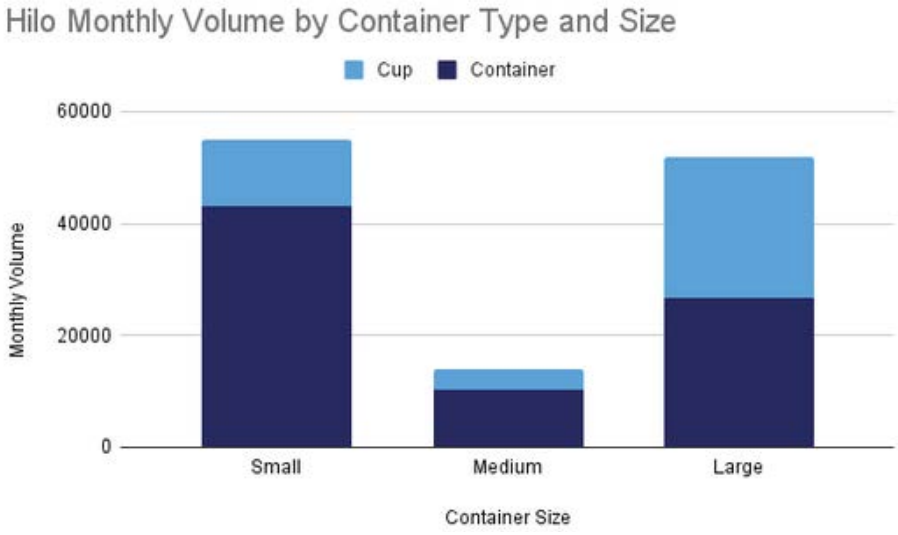
AVAILABLE DATA

- The Living Landscape of Reusable Solutions has identified that out of the 171 Reusable Cup and Container Programs across the world, 40% are cup programs and 60% are container programs. Approximately 7% of the organizations running these programs have both a cup and container program.
- Initial data collection findings: 2,500 glass bottles / month in Hilo from high likelihood adopters.

Volume Data as of March 5 (additional data collection underway)
- Volume data from 25 establishments.







SCOPE: BACKGROUND (CONTINUED)

INSIGHTS FROM COMMUNITY WORKSHOPS

- *Support expressed for the reuse idea, not supportive of more trash imported into Hilo. Since so many people are "set in their ways," let's "start small" with a system of reusable cups to ensure that people can get into the habit of returning the used item to a bin.*
- *Throughout engagement we have heard great interest in the community to have a program that would support refillable jars for local beverages and foods.*

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

Cups

- Cups have shorter use cycle thus require less inventory
- People can bring their own. Eligible for BYO
- It seems like many cups are used. High volume seen in trash
- Single-use paper cups often include a plastic liner
- Many cups are made with plastic - more potential to reduce plastic

Containers

- Aligns with school program
- Many used during lunch time
- Customers cannot bring their own. Not eligible for BYO
- Plastic containers lasted many use-cycles
- Existing paper containers often have chemical additives for performance
- Format Tradeoffs: Clamshell - takes up more space when cleaning, Bento - might loose lids
- Many containers are seen in the public waste bins

Refillable Jars

- Support and inline with existing bottle bill
- Existing Washing system at university worked well with glass jars

General Comments

- We need to think about stackability
- **Want to support which ever is highest volume**

REUSABLE ASSETS: RECOMMENDATIONS

RECOMMENDATION

Based on the current volume usage and community preferences, the system should offer a mix of small and large foodware containers with a focus on bento box and single-compartment containers. Material options will be identified in later document iterations based on market availability with a preference for glass or stainless steel.

Use very simple universal branding for the containers that does not make them an attractive souvenir.

SPECIFICATIONS

Material(s)
- TBD

SKUS/ Assortment
- TBD

Serialization & Tracking
- RFID - for serialization and tracking
- QR code - for secondary serialization and to provide users with info

Quantities
- X at launch
- X additional every 6 months for X years

Branding
- Simple, plain, universal

Potential Vendors
- Reusables.com (SS)
- Returnr (SS)
- TURN (PP)

REUSABLE ASSETS: BACKGROUND

Reusable containers come in many different shapes, sizes, and materials.

STAINLESS STEEL

Pros:

- Durability: significantly higher number of rotations possible
- Aesthetically pleasing, feels high quality
- Insulation: keeps hot drinks hot and cold drinks cold; no condensation or heat transfer
- No exposure to chemicals of concern for user
- Clear to consumers that it is not disposable, which minimizes losses (accidental disposal)

Cons:

- Weight: heavier than plastic, not practical for very large sizes, e.g., 44oz drink
- Cost: more expensive than plastic, requiring a higher 'replacement fee' if not returned
- Potential challenges with batch scanning if stacked
- Not microwave safe - though microwave-safe stainless steel is now available
- Not see-through
- May be attractive to keep as a souvenir

POLYPROPYLENE

Pros:

- Lightweight, which is easy for user and also keeps greenhouse gas footprint from transportation lower
- Low cost
- "Microwave safe" (though we do not recommend microwaving food in plastic!)
- Can be see-through

Cons:

- May expose user to chemicals of concern, especially for hot foods or foods with fat content
- Not recycled locally; limited recyclability elsewhere
- Lower number of uses possible before needing to be replaced relative to stainless steel/glass
- No insulation (though there are some 'foamed' polypropylene products coming to market)
- Users may get confused about whether it should go in the trash, recycling bin or reuse bin
- Shows wear and tear - scratches, nicks, stains
- Without specialized drying equipment, can take 48 hours to air dry, which adds cost to system

GLASS

Pros:

- No chemicals of concern
- Can be reused many times
- See-through container
- Aesthetically pleasant

Cons:

- Weight: heavier, a challenge for users and higher greenhouse gas emissions from transport
- Cost: more expensive than polypropylene
- Limited nesting / stackability
- Not insulated
- Not suitable for hot food and beverages without some kind of insulating material
- Concerns around breakage of containers - safety issue, waste/loss issue

REUSABLE ASSETS: BACKGROUND

Reusable containers come in many different shapes, sizes, and materials.

RELEVANT RESOURCES FOR MATERIAL CHOICE

A selection of resources are shared below as supplemental materials that dive into environmental impacts of material choices, consumer perceptions of certain materials, and human health implications for across different material choices.

LIFE CYCLE ASSESSMENT AND CONSUMER PERCEPTIONS

Greenwood, S., Walker, S., Baird, H., Parsons, R., Mehl, S., Webb, T., Slark, A., Ryan, A., & Rothman, R. (2021). Combining insights from the environmental and behavioral sciences to understand what is required to make reusable packaging mainstream. Sustainable Production and Consumption, 27. https://doi.org/10.1016/j.spc.2021.03.022

Hitt, C., Douglas, J., Keoleian, G. (2023). Parametric life cycle assessment modeling of reusable and single-use restaurant food container systems. Resources, Conservation and Recycling. 190. https://doi.org/10.1016/j.resconrec.2022.106862

FOODWARE SAFETY AND CHEMICALS OF CONCERN

Food Packaging Forum. (2023). Factsheet: REUSE Of Foodware and Food Packaging. Food Packaging Forum.

GreenScreen Certified™ Standard for Reusable Food Packaging, Food ServiceWare, & Cookware
https://ceh.org/greenscreen-certified-standard-for-reusable-food-packaging-food-serviceware-cookware/

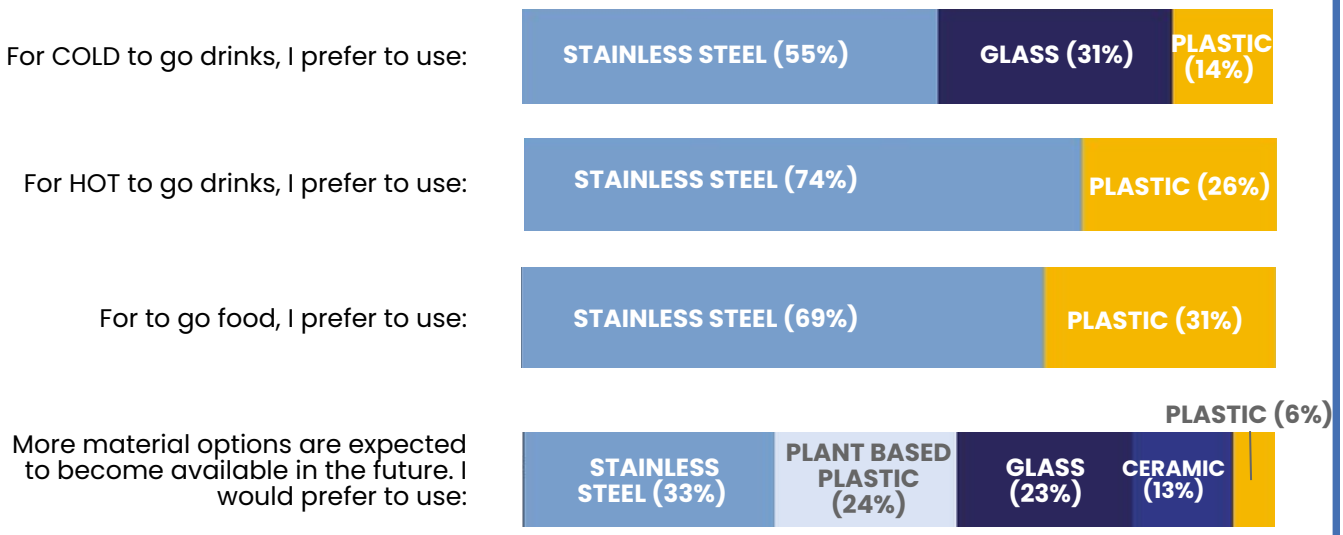
Is It Safe to Reuse Plastic Take-out Containers?
https://www.epicurious.com/expert-advice/is-it-safe-to-reuse-plastic-takeout-containers

Which plastic food containers are safe to reuse?
https://www.foodpackagingforum.org/news/which-plastic-food-containers-are-safe-to-reuse

REUSABLE ASSETS: BACKGROUND

Reusable containers come in many different shapes, sizes, and materials.

INSIGHTS FROM COMMUNITY WORKSHOPS



Container material preferences shared by community members:

- Glass, durable plastic, wood and bamboo, banana leaf, stainless steel
- Stainless steel and glass are easy to clean and transport/carry
- Needs to be washable in a commercial dishwasher, needs to be sanitizable
- Multiple sizes, standardization with fewer options, easy to return, stackable
- Prefer biodegradable options if possible

REUSABLE ASSETS: BACKGROUND

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

Plastic

- More likely to throw away plastic vs. stainless steel
- Plastic containers can last many use-cycles
- Low enthusiasm based on community engagement data
- Some team members are more comfortable using plastic for cold beverages compared to hot.
- Lighter to carry around
- Should not be used for piping hot food & beverages
- Sometimes gets stained
- Plastic can be perceived as disposable and thus doesn't get returned to be reused
- More challenging to dry. Takes time or specialized settings
- Could be a good "training wheels" starting point

Stainless Steel

- Wide availability of recycled stainless steel
- Should be used for hot beverages
- Quick drying time compared to plastic

Glass

- Concerns about breakage
- Long term solution, not a starting point
- Engineered glass (i.e. pyrex) is not easily recycled
- Stackability (lack of) is a deal breaker for many businesses
- Perceived as reusable
- Glass innovation could help address the breakage concerns

General Comments

- Think about full life-cycle (i.e. mining through to end of life)
- Important to get buy-in from food businesses on format and size

TECHNOLOGY: RECOMMENDATIONS

RECOMMENDATIONS

For **frontend technology, adopt the "seamless checkout" model**, which uses RFID/QR and links the reusable item with a user's credit card, allowing for a later charge if the item is not returned to the system. The system does not collect any other personal information from the user. Users have the option to download an app and link their credit card to their profile to receive return reminders and rewards.

For those who do not have a credit card or prefer using cash, the program will offer RFID enabled tokens such as a keychain or card that can be prepaid with cash and used for the checkout process. Individuals that participate in government benefits programs may be able to receive prepaid cards through those programs at select participating locations.

For **backend technology, license an asset management platform**. This platform is the central repository for all asset management data. Reuse service providers operating other parts of the system would be able to use and communicate with this database, while protecting data privacy.

TECHNOLOGY: BACKGROUND

Technology for the check-out process, e.g., business scans, consumer scans, use of app, etc.

Why do we need tracking? Tracking each reusable container is essential for measuring the program's environmental impact and ensuring operational efficiency. Serialization, assigning a unique identifier to each container, enables precise monitoring of usage patterns and return rates without tracking the individual users. This approach, similar to the close-range reading technology used in credit card chips, ensures data privacy. This data helps in managing inventory, maintaining a consistent supply of clean containers, and assessing the system's environmental impacts including quantifying avoided waste and Greenhouse Gas emissions. Many types of technology options exist both for the consumer interface and the backend management (tracking/sorting) of reusable assets (cups/containers).

Frontend: The frontend consumer interface at the Point-of-Sale should include features that facilitate easy tracking of containers. This could be through QR codes, RFID tags, or other digital identifiers that consumers can scan when taking or returning a container. The consumer interface design should be intuitive and provide immediate feedback to consumers about the status of their container (e.g., checked out, due for return), enhancing their engagement with the system. Streamlining the Point-of-Sale process to be quick and intuitive is crucial, as behavior research indicates that people are less likely to participate in programs that they perceive to slow down service.

Backend: Backend technology refers to the platform that tracks assets through the return, washing, storage and reverse/forward logistics phases of their journey. Required functionalities include the integration of multiple asset types potentially from a variety of asset owners. A 3rd party platform is preferred as it alleviates potential concerns from various asset owners regarding accumulation or sharing of proprietary data.

TECHNOLOGY: POINT-OF-SALE (POS) OPTIONS

SIGN UP TO REUSE

In a "sign up to reuse" system *consumers go through a signup phase before they are able to check out a container. This may include either the use of an App (which needs to be downloaded) or a web-based app (which is accessed through a webpage, no download required). Most "sign up to reuse" options require scanning the container to check-out an asset. The most common technology for this is the use of a QR code, or RFID or NFC chip.*

Pros: Ongoing engagement of consumers through an app/web-based app.
Cons: Requires download, which can be challenging in the moment of trying to buy food or drink. Requires a smartphone, which not everyone has, as well as service or wifi in the moment of checkout. The need to "scan" an item at the point of sale can slow down the purchase.

SEAMLESS CHECKOUT also known as "TAP TO REUSE"

The seamless checkout *function works by allowing customers to check out the asset when they use their credit card to pay, either as part of the same 'tap' or with an additional tap. Seamless checkout can be integrated with payment processing platforms such as Stripe. There can be a supporting optional app that people can sign up for to get reminders, metrics, and rewards.*

Pros: Not needing to sign up makes check out faster for both consumer and business. Already integrated with some common POS systems. Optional app provides return reminders.
Cons: Requires the need to accommodate for populations without credit cards (possible solutions include integration with transit passes, benefit cards, or RFID enabled tokens such as a keychain or card). Technology is still emerging in the reuse space, so there is smaller reuse service provider pool operating with tap technology. Requires people to understand and agree to what they are signing up for, including that they might be charged for not returning the item.

INSIGHTS FROM COMMUNITY WORKSHOPS

Would you be willing to scan a QR code with your phone as part of using a reusable cup or container system?

Do you typically purchase food and drinks to-go with cash, card, or app?

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

Token option for people without a way to pay: token could be a card (similar to the Safeway, Ace Hardware, Foodland, etc. rewards cards) with a unique identifier the user picks up when they collect their other benefits or from one of the various social service providers.

RETURN INCENTIVES: RECOMMENDATIONS

RECOMMENDATIONS

Reuse should be free to users as long as they return the reusable item. To this end, use a **check-out model that allows users to check out reusable items for free and be charged a Non-Return Fee** for the reusable item if it is not returned within the allowed time. **Proposed maximum time to keep an item is 1 week**. Participants may request an extension to the return timeframe if needed. If an item is returned at a later date, they will be reimbursed for the charged value of the item, minus a processing fee to be determined.

Assign a **Redemption Value to reusable items of $0.15 per item** to be paid to people who collect abandoned items and return them to a Redemption location. Items that have been checked into a bin will not be eligible for redemption, to discourage theft. People whose items are returned through redemption will be charged $0.25 to cover the cost of the redemption and redemption process.

RETURN INCENTIVES - CHECKOUT: BACKGROUND

Models to incentivize consumer return of reusable, agreed upon at check out

NON-RETURN FEE MODEL ONLY

Consumers pay nothing at check out, and are charged a fee only if the reusable is not returned.

Pros: Consumers may be more willing to choose a reusable item if it is free to participate. Behavioral research has shown that people will do more to avoid a small fee than they will to receive a small sum (e.g., return of deposit). Technology exists to implement this solution.

Cons: Requires customer to use a credit card to check out the item, though alternative options are in development, such as the use of a token, transit card, or other. Need to ensure that customers understand that they agree to be charged if they don't return the reusable item.

DEPOSIT MODEL ONLY

Consumers pay a deposit at checkout, which is reimbursed when the reusable is returned.

Pros: Financial value is tied to the item itself, providing an incentive for anyone to pick up and return a lost or littered item. Deposit systems are a familiar model (e.g., HI5 program).

Cons: Deposits can impose unmanageable upfront costs that can be barriers to using the system (reusable items may cost $5-10 to replace, requiring a deposit in this range). From a behavioral point of view, when people pay a deposit they feel like they have purchased something, making them less motivated to return it. Management of cash deposits is complex.

BOTH SYSTEMS SIMULTANEOUSLY

Consumers have the option to use either incentive model.

Pros: Provides consumers with more choice.
Cons: Complexity for businesses and consumers. Would require adapting technology platform.

RETURN INCENTIVES - RETURN: BACKGROUND

Models to incentivize consumer return of reusable, post check-out

RETURN TIMEFRAME

The amount of time consumers are allowed to keep the reusable item before returning it

Ensuring an optimized return timeframe is crucial, balancing consumer convenience and alignment with current routines with maintaining an adequate stock for circulation. Short return timeframes can create frustration and cause extra trips to return items, which add environmental impact. Longer return timeframes create a need for as much as 2 or 3 times the level of required inventory to maintain availability, adding significant cost to to the system. When given longer to return items, consumers are more likely to wash the item, which is discouraged (adds environmental impact) and more likely to forget about it or lose track of it.

Reference points:

- *Vessel* (New York) required return within 5 days, and most came back within 3.
- *Bold Reuse* (Portland OR) and *Recirclable* (MA/RI) require return within 2 weeks.
- *DeliverZero* of New York allows 3 weeks.
- *Cano* (Canada) has consumers return within 2.2 hours on average, with incentives for return within 48 hours of check-out. Cano also leverages existing bottle depots for returns.

Note: One reason for longer timeframes is lack of return infrastructure. In a community-wide system with convenient bins, a shorter return timeframe is reasonable.

LATE FEE

Consumers are charged a fee for returning the reusable after the allotted time.

Late fees are an incentive for consumers to return their items to the system. As with any fee, there are equity concerns that these could penalize vulnerable populations. Rather than implementing late fees, especially in a low-income area like Hilo, we may consider prioritizing proactive communication. Timely reminders before due dates and gentle nudges for lateness can encourage responsible practices without relying on late fees. This approach fosters a sense of community responsibility, ensuring accessibility to all residents while maintaining a steady circulation of items in the reusable foodware system.

REDEMPTION VALUE

Anyone returning an checked-out item to a redemption center is paid $0.15.

By placing a redemption value on reusable assets, we are assigning a monetary value that will incentivize items that are lost or littered to be returned to the system and kept in circulation. This can help ensure that items can be used to their full potential thereby enhancing environmental benefits of the reusable foodware program. Moreover, by providing a cash value for these items, we're creating a potential source of income for community members who could use the support.

NON-FINANCIAL REWARDS AND INCENTIVES (EXAMPLES)

Consumers are rewarded with non-financial incentives that encourage participation and return.

INTERMITTENT REWARDS

As an example, every 1 in 10 consumers receives a 10% off at a participating restaurant. These types of rewards could be on a variable schedule so the time between rewards changes randomly.

GAMIFICATION

Users are rewarded virtually with streaks, milestones, badges, challenges, etc.

POINTS SYSTEM (INTEGRATION WITH LOYALTY PROGRAMS)

Users are awarded “points” when they participate with the reuse system; a certain amount of “points” are redeemed for discounts/free items from participating vendors (comparable to travel miles, star rewards, and pizza rewards systems).

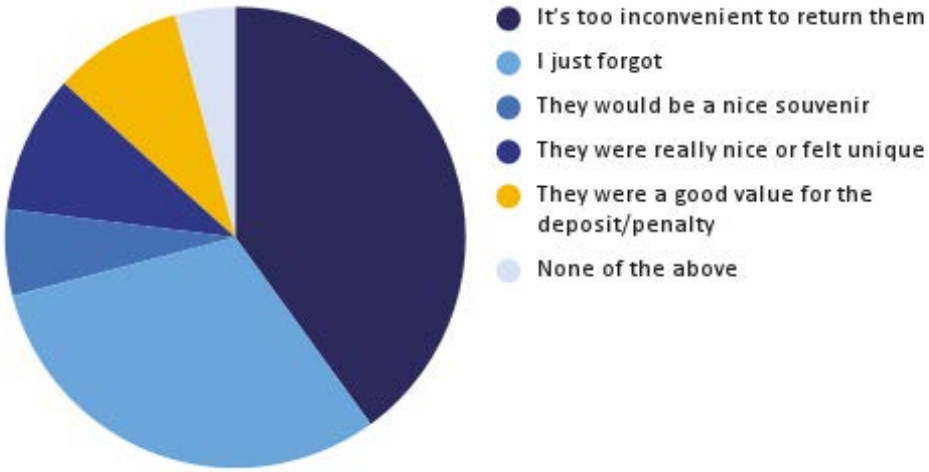
RETURN INCENTIVES: BACKGROUND

INSIGHTS FROM COMMUNITY WORKSHOPS

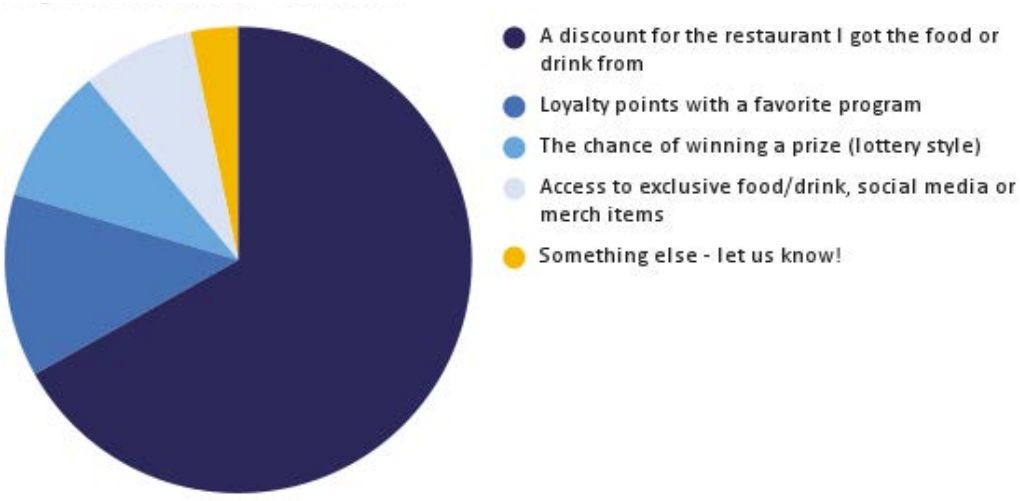
Which type of check-out system would work best for you?

How long would you want to keep your item before returning it?

I would be tempted to not return reusable cups and containers or reusable bottles if...



Which kinds of rewards would most motivate you to return your cup or container on time?



RETURN INCENTIVES: BACKGROUND

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

Models to incentivize consumer return of reusable, agreed upon at check out

Non-Return Fee Model

- Minimizes upfront cost
- How will a person without money pay the non-return fee?
- When surveying friends and family, many were comfortable with a non-return fee of $1-5 or more

Deposit Model

- Data from workshops may have been skewed towards deposit choice as the deposit amount was unclear; assumption of low (50 cents) cost
- A small deposit would be ideal though would be less than the value of the container.

Both Models Simultaneously

- A hybrid option could work well with a pre-paid option as deposit
- Simpler is better for the retailer

Models to incentivize consumer return of reusable, post check-out

Return Timeframe

- Consider accommodating individual requests to extend return timeframe
- IDEA: Collect users' zipcode at check out, zipcode is tied to check out timeframe
- Program could have grace period as the system starts out to give people time to understand process

Non-Financial Rewards & Incentives

- Consider an Incentive for returning item quickly
- Positive incentives work better

COLLECTION - BIN DESIGN AND MANAGEMENT: RECOMMENDATIONS

RECOMMENDATIONS

Deploy 75-100 outdoor bins at launch, using a mix of tech-enabled and non-tech collection bins. Participating businesses will be encouraged to have an indoor collection bin.

SPECIFICATIONS

	Indoor Bin Specification	Outdoor Bin Specification
Material	Wood, polypropylene or other material	Wood, stainless steel, or other material
Assortment	Countertop and Freestanding	N/A
Serialization & Asset Tracking Mechanism	Non-tech enabled and UHF / RFID	Non-tech enabled and RFID
Branding	Potential co-branding	Reuse system branding
Quantities	X at Launch X additional every 6 months for X years	X non-tech wood X tech-enabled wood X pet door stainless steel
Footprint	Variety of sizes available depending on businesses' space	2.5' x 2.5' x 4' - 3'x 2'x 5
Permitting	N/A	Business Vestibule - no permit Public space (e.g. sidewalk)- License to Use permit required
Potential Vendors	reusables.com	Don't Waste Durham Design + Local build, reusables.com, TURN

COLLECTION- BIN DESIGN AND MANAGEMENT: BACKGROUND

Collection bins are where community members return reusable items back to the system. This includes both Interior and Exterior bins (street-hardened).

INDOOR

Reuse return receptacles would be placed indoors at participating restaurants, grocery stores, convenience stores, movie theatres, rec centers, and other community spaces frequented by the general public and/or tourists.

Indoor bin options vary from simple bus bins to sophisticated tech-enabled return bins. Tech-enabled bins are effective at engaging users in the return experience, enhancing asset tracking, and reducing contamination by only opening for reusable items. The downsides of tech-enabled bins are that they are more expensive, require energy and internet connectivity, and there are more ways that things can go wrong with them. While there are a number of tech-enabled bins in use today, they are still early in their development.

To accommodate the diversity of businesses, including such factors as space availability, staffing, business type, etc., multiple return bin shapes and sizes should be offered, with tech-enabled bins being placed where they can be best supported by the host business. Since many businesses have highly developed branding and or aesthetics, return bin providers will work with each business to reasonably accommodate customization and or co-branding requests, while ensuring there is a consistency of experience for reuse system users. (Businesses will be responsible for costs associated with customization.) All return bins regardless of shape/size will have consistent and easily identifiable markings, aligned with PR3 standards, with obvious instructions for return.

OUTDOOR

Outdoor bins must be able to withstand the elements, be easy to clean, and be secure to prevent theft and manage vandalism. Bins come in many different sizes, shapes, and materials. Outside bins are commonly stainless steel or wood. Bins can be designed/decorated to fit the local culture, ideally by local artists.

We will assess for each location whether a tech-enabled bin is appropriate or not, with awareness to ensure access to be high-tech and non-tech bins is equitable. The reuse industry is still testing outdoor return receptacles and it may make sense to adopt additional types of return bins as the program grows and development in the industry advances.

COLLECTION- BIN DESIGN AND MANAGEMENT: BACKGROUND

Collection bins are where community members return reusable items back to the system. This includes both Interior and Exterior bins (street-hardened).

DESIGN CHOICES FOR ALL BINS

- Multiple items in one bin vs item-specific bins (bins can be slim profile and modular, and they are placed together)
- Removable, washable rigid interior container vs reusable bag vs single-use bag -> use LCA to assess best option given logistics
- Material choice: wood, metal, plastic, MDF/composite

MUST-HAVES FOR BINS

- Secured: one-way door or other securing mechanism so people can't take things out once they are in; bin bolted in place

DESIGN CHOICES FOR TECH-ENABLED BINS

- Option of screen interface or no screen: influences energy usage, user experience, durability
- "Pet door" vs drop-in
- User scan vs auto scan or chip reader
- Internal stacking (nesting items) vs non-nested (jumbled)

EXAMPLES

Non tech-enabled bins

Tech-enabled bins

COLLECTION- BIN DESIGN AND MANAGEMENT : BACKGROUND

Collection bins are where community members return reusable items back to the system. This includes both Interior and Exterior bins (street-hardened).

INSIGHTS FROM COMMUNITY WORKSHOPS

Considerations mentioned during engagement

- *Bins must be secure*
- *Insects are a real challenge here, need to make sure they are kept clean*

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

Could see problems with tech-enabled bins being vandalized

Unfortunately there is a serious vandalism issue. It's a small portion of the population that are naughty, but their impact is real. Collection bins must be "bullet proof" against theft in isolated areas

Important to service and maintain to avoid becoming a public issue (i.e. bugs, leakage, DOH)

Need to be very secure to prevent theft & vandalism

Bin branding should reflect local community not a outside service provider's brand (signage and verbiage)

COLLECTION- LOCATIONS: RECOMMENDATIONS

RECOMMENDATIONS

Collection bin placement is based on analysis from data science partner. See page 38 for a draft map of collection locations. Ground truthing will be done to proposed bin locations.

Establish ~3 redemption sites in Hilo. These sites should be located in places that are easily accessible to people who commonly collect other items with redemption value, such as bottles and cans.

COLLECTION - LOCATIONS: BACKGROUND

Collection locations include both collection bins and redemption sites throughout the community where community members can return reusable items back to the system.

COLLECTION BIN LOCATIONS

CONVENIENCE IS KEY
The project aims to make reuse as convenient as disposables. This means that returning reusable items should be convenient and accessible to all community members with collection bins placed in areas where community members frequently go. Typically, every location that participates will have an indoor return bin. Additionally, heavily trafficked locations such as the public library, post offices and grocery stores would also be supplied with return bins. The aim is to have bins placed strategically so that there is always a bin on the way to somewhere you are already going on a regular basis. Not only does this help with convenience of the program and ensuring high returns, but also prevents community members from making dedicated trips to drop off a reusable item, which erodes environmental benefits.

DATA DRIVEN APPROACH
Project partners at the University of Chicago Data Science Institute (DSI) have developed a methodology to identify and map collection bin locations. This map will take into account high traffic areas in the community, areas with high population density, tourist hot spots, and over time will include businesses that are highly likely to participate in the program.

COLLECTION: REDEMPTION SITES

Items that are abandoned by the person who checked them out still need to be returned to the system to keep items circulating, avoid 'durable litter,' and support the economics of the reuse system. Community members who are motivated to collect items such as bottles and cans for their redemption value can benefit from having additional items of value to collect. Reusable items with a redemption value can provide them with extra income while helping the reusable foodware system to be more successful.

Redemption sites are places where people who have collected abandoned items can bring the items to check them back into the system and receive payment for the redemption value. While collection bins exist that can dispense cash, they have not yet been deployed beyond pilots and they are quite pricey, so they are not a good option in the short term but they could be an option longer term.

For the first six months of operations, at least, redemption sites will need someone to manually scan the item to confirm it hasn't already been checked into the system (to ensure it wasn't removed from a collection bin), dispense the cash value of the redeemed items, and then securely check the item into the system.

COLLECTION - LOCATIONS: BACKGROUND

Collection locations include both collection bins and redemption sites throughout the community where community members can return reusable items back to the system.

INSIGHTS FROM COMMUNITY WORKSHOPS & DATA SCIENCE INSTITUTE MAPPING

Draft collection bin placement map produced by partners at the Data Science Institute. There are 401 unique locations in the current dataset, of which 271 are foodware using establishments (FUEs). Locations have been added based on proposed locations by community members during workshops (print map activity and padlet activity), and DSI's standardized protocol for collection bin placement. Page 38 features a static photo of the map (screenshot taken 3/7/2024). The map will continue to be updated. At this time the map only includes placement of bins within Hilo boundaries. We have heard requests during workshops and system design discussions to offer additional outpost collection points; these locations will be included in future iterations of the map. The heat map layer on the map shows high traffic areas, interpreted here as the total number of unique monthly visitors between January 1, 2018, and March 1, 2021, inclusive.

You can view the most current map in a more dynamic way here:
https://storage.googleapis.com/perpetual-temp/hilo_outdoor_bins.html

COLLECTION - LOCATIONS: BACKGROUND

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

Consider high tide during storm events along the coast line

Consider working with bus line to have collection on buses.

We will need to connect with state entities that run state parks, port, etc.

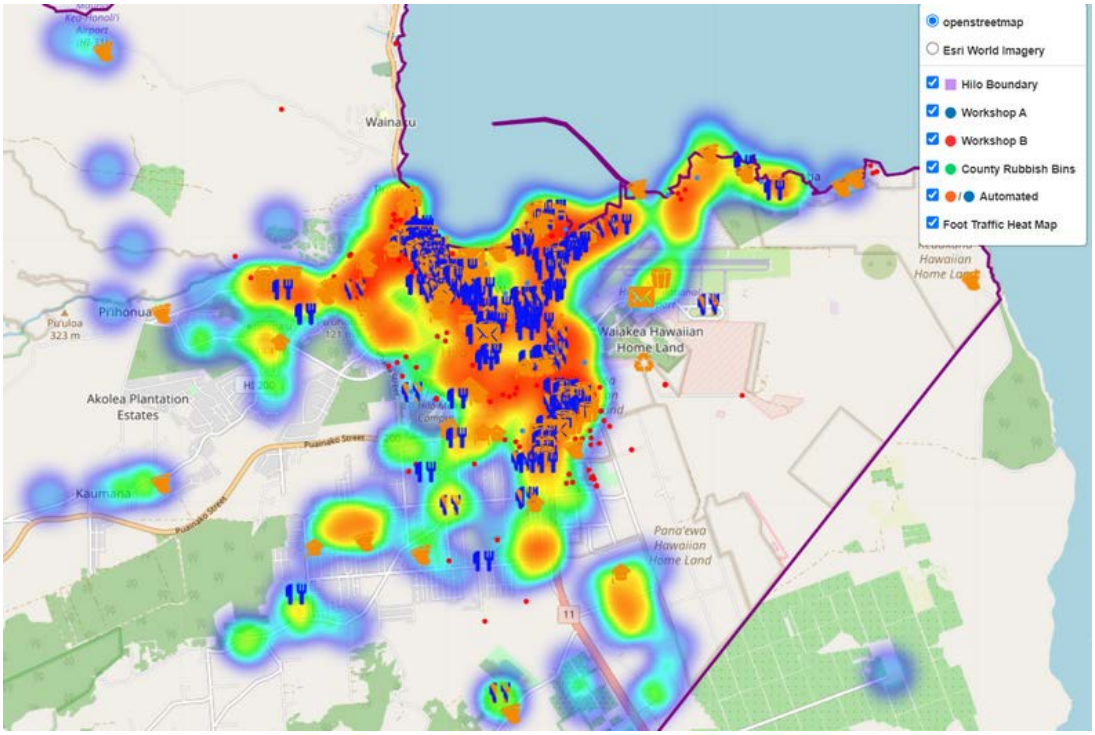
Would like to see outpost bins for people who live outside Hilo

COLLECTION - LOCATIONS: BACKGROUND

Collection locations include both collection bins and redemption sites throughout the community where community members can return reusable items back to the system.

INSIGHTS FROM COMMUNITY WORKSHOPS & DATA SCIENCE INSTITUTE MAPPING

Location Type	Icon	Number of Bins
Foodware Using Establishment (FUE)	Fork and knife • blue - indoor • orange- outdoor • blue & orange stripe - both indoor and outdoor collection points	271 (All FUEs have an indoor bin and 25% have an outdoor bin)
Big Box Grocery and Pharmacy	Grocery cart	
School	Graduation cap	
Commute Hubs and Office Space	Briefcase	
Large Hotels with 90+ Rooms	Bed	
Large Apartment Buildings, Multi-Family Homes, or Senior Living Centers of 40+ Units	House	
Bottle Redemption Station or Municipal Recycling Dropoff Site	Recycling Logo	
Parks and Public Spaces	Foot	
County Trash Bins	Green Circle	
Post Office & Collection Locations	Envelope	
	Total	**469** (271 indoor, 198 outdoor)



WASHING: RECOMMENDATIONS

RECOMMENDATION

Establish a new wash hub per the noted specifications in a centralized location. SWIFR funding will be leveraged to procure and install washing equipment for the facility. Additional funding will be identified for the washing facility lease.

SPECIFICATIONS

Facility Requirements

- Electrical - 208v
- Plumbing - hot water direct and drain
- Square feet washing and drying - XXX
- Square feet storage and sorting- XXX

CONSTRUCTION & PERMITTING CONSIDERATIONS

- New facility
- Water meter - 6 month lead time
- Building Permit

Machine Specifications

- 1 Meiko B-L94 V8 4BD / M iQ B (or similar) + dry technology - Primary machine long-term

FACILITY LOCATION

Facility locations are being identified and scoped out for this project. Locations should be central in the community and meet specifications above. Retrofitting a space for washing infrastructure is timely and expensive; it is ideal that the space selected is the long-term location for the program.

PERMITTING & REGULATORY - HAWAII DEPARTMENT OF HEALTH

System design specifics including container types, material and washing facility details will be submitted to Hawaii Department of Health for review and approval.

WASHING: BACKGROUND

The washing and sanitization facility, infrastructure, and procedures are critical to the success of the reuse system.

OVERVIEW

Centralized washing hubs offer opportunities to achieve decreased cost for system participants, assurances of high standards of hygiene and sanitation, and increased environmental benefits. Additionally they facilitate the opportunity for businesses without their own washing capacity to still participate in reuse.

Major considerations for a washing facility include location, space capacity, vehicle access, and electrical and plumbing requirements. Depending on pre-existing community-based assets, facilities may need to be designed and stood up from scratch, existing infrastructure may need to be upgraded to accommodate reuse system specifics (such as scanning and storage).

This project has secured funding for the procurement and installation of washing equipment. A facility for the equipment has not yet been identified but the project may consider partnering with other organizations to co-locate the equipment with commercial kitchens. Temporary solutions may be needed for early stages of the program such as leveraging existing underutilized washing facilities.

The washing facility will need at least one conveyer or flight-style washing machine with additional onsite space to accommodate up to 3 additional lines and associated drying and storage.

Conveyor Style Washing Machine

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

System could wash for closed-loop programs (e.g. schools that do not have dishwasher on site). Closed loop systems help bring volume to the washing operation which is helpful in the early days.

Consider dishwasher that can accommodate glass containers

Take vehicle access, plumbing, electric, and existing infrastructure into account when selecting a facility for washing

REVERSE AND FORWARD LOGISTICS (RFL): RECOMMENDATION

RECOMMENDATION

Mobilize a mix of electric vehicles (cargo bikes, trucks, vans, etc.). Data science partners will optimize logistics for cost and environmental impacts through modeling. Integrate with existing systems to increase convenience of the system and maintain high return rates for community members who may reside outside of Hilo's main area.

DRAFT ROUTING

Draft routing will be added once available from partners at the University of Chicago Data Science Institute.

REVERSE AND FORWARD LOGISTICS (RFL): BACKGROUND

Collection model and requirements for transport vehicles and routing configuration.

OVERVIEW

Reverse and forward logistics (RFL) play the critical role of collecting used items, delivering them to the washing facility and redistributing clean items to participating locations. Often RFL also play a role in tracking assets throughout their reuse journey by scanning items at each transfer point in the journey, much like the tracking of a package through the postal system. Crucial components of the RFL include vehicles, tracking hardware, tech-enabled routing capacity and secondary packaging to transport the reusable assets. Some of these items such as secondary packaging and hardware/software may be provided by asset owners and/or technology providers. As such, the focus here is on identifying a blueprint for collection and distribution routing that builds environmental and economic efficiencies while accommodating swells in population and traffic. Additional considerations include planning for potential business designated "receiving" hours.

As the system grows, it will be important to keep an eye toward integration with food delivery services and other potential distribution channels to facilitate easy adoption and build long term optimization.

Given Hawai'i Island is a dispersed community and many people live outside of Hilo but make dedicated trips to town on a regular but infrequent basis, integration with existing systems may be required to increase convenience of the system and maintain high return rates. For example, partnering with Hele-On may make it easier for folks to return items back to the system if they do not live in Hilo.

Following identification of collection points and additional mapping exercises, data science partners will optimize logistics for cost and environmental impacts through modeling. The system will likely consist of a mix of electric vehicles (cargo bikes, trucks, vans, etc.). While a bike route may not be optimal for the logistics of the program's efficiency, it may be a worthwhile option to have a bike route downtown for the public visibility.

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

Consider existing routes that could support servicing collection bins that are in less dense areas

LABOR: RECOMMENDATION

RECOMMENDATION

All reuse system jobs will **pay a living wage and provide health care benefits**. Partner with local workforce development programs to offer employment opportunities to disadvantaged people.

LABOR: BACKGROUND

Local job opportunities created through the implementation of a reuse system.

OVERVIEW

The Hilo reusable foodware system will bring new jobs to the community. System design priority is placed on utilizing existing community assets and individuals to fulfill various components of the system such as washing or logistics. Even in the case that a portion of the system is fulfilled by external businesses, that entity will still need to hire local employees to run and operate the system.

In Hilo, there is interest in establishing local capacity to operate the reuse system. To accomplish this, the project might consider analogs of other projects supporting local communities through capacity-building.

Jobs created in reuse systems include operations managers, collection and delivery personnel, washing staff and community outreach coordinators. The system design takes into account living wage salaries, benefits and job training. These jobs offer great opportunities for upward mobility and experience for low skilled workers. Additionally, some of these positions are well-suited to underserved populations such as those previously incarcerated or differently-abled persons.

Despite recent challenges in many industries to obtain and retain employees, this has not been the case for reuse service providers nor washing facilities offering circular solutions. These jobs are often prized for being part of the "circular economy," offer upward mobility in the sustainability field and usually are accompanied by good wages, a positive work culture and shared vision for meaningful impact.

INSIGHTS FROM COMMUNITY WORKSHOPS

Considerations mentioned during engagement

- Hiring and retaining employees is hard in Hilo.
- Desire to use this program to create opportunities for local people.

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

Leverage existing labor organizations (Going Home, UHH, HawCC)

SURGE EVENTS: RECOMMENDATION

RECOMMENDATION

While Hilo sees a strong tourist flow, the average monthly visitors is fairly steady throughout the year. The Hilo reuse program will regularly accommodate influxes during days cruise ships are at port thus, the system will need to have sufficient assets available to accommodate this volume.

SURGE EVENTS: BACKGROUND

Events that result in major influx of people to the community.

OVERVIEW

Some communities experience heavy tourist flows and events that bring an influx of people to the area. This often necessitates distinct volume, washing and logistics planning to accommodate fluctuations in the system. While Hilo sees a strong tourist flow, the average monthly visitors is fairly steady throughout the year in a way that the system will be able to accommodate the volume during busier months and one-off events, such as the Merrie Monarch Festival. The Hilo reuse program will regularly accommodate influxes during days cruise ships are at port thus, the system will need to have sufficient assets available to accommodate this volume. The cruise ship schedule is readily available far in advance which also allows the system to prepare ahead of time and manage staffing, assets, and logistics accordingly.

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

Events to consider:

- Events with several of food trucks - food trucks don't have washing and would be ideal participants.
- UH-Hilo and HCC graduations; occur at least twice per year
- Merrie Monarch - annual event in March / April; 1 week long event
- World Sprints in Hilo, August 2024. 4,000-6,000 international, local & continent paddlers & entourages.

GOVERNANCE: RECOMMENDATIONS

RECOMMENDATION

Explore governance model options with County Government to determine best path forward to manage program.

GOVERNANCE: BACKGROUND

How the oversight and management of the reuse system is supported long-term, including ensuring environmental and economic viability, equitable access and responsiveness to community needs.

OVERVIEW

An effective governance model will ensure that the community has input on how the system will be designed to best serve its unique needs, including questions of equitable access and interoperability if multiple providers are serving the same geography. Designating a governance body that can facilitate community driven system criteria, manage contracting and serve as an ongoing platform for community input and system optimization is critical.

A variety of governance models could be applicable and depend on what role local government is best positioned to play. The local government can choose to operate some or all of the system themselves, they may contract system activities out to reuse service providers, or they may simply wish to provide recommendations on how reuse systems operate in town.

There may be parts of the system infrastructure, such as the washing facility or return bins, that are community owned and establishing rules for how they interact with other system elements will be an important part of governance. Some communities may choose to establish a non-profit with a steering board to govern the system. Others may find a different model best suits their needs and community capacity.

As the recipient of the EPA's Solid Waste Infrastructure (SWIFR) Grant, the County of Hawai'i will have a role in the Hilo reuse program including handling funding and running the RFP process. Even with these known factors, there remain different options for governing the system over time.

County's Roles

- Apply for and manage federal government funds to support the reuse service system, including reporting performance and financial metrics to fulfill grant obligations.
- Provide oversight to ensure the Reuse System is compliant with laws, health code, etc.
- Ensure the reuse system is responsive to community needs over time
- Run the RFP process for reuse service providers and other procurement for the system.
- If Reuse System Management Role is another entity, hold them accountable.

Reuse System Management Role - Can be County or can be contracted to another entity

- Provide structure within which different service providers can work together in a productive, efficient and optimized way, including coordinating off-hours response
- Be responsible for the overall quality and success of the reuse system
- May provide the business enrollment and billing function to have a single point of contact.
- Coordinate and drive system-level marketing efforts in the community.
- May serve as an asset owner, if other RSPs do not wish to own the reusable assets.

Reuse Service Provider(s)' Roles

- Operate the reuse system elements: washing, reverse and forward logistics, return bin management, per contracts.

GOVERNANCE: BACKGROUND

How the oversight and management of the reuse system is supported long-term, including ensuring environmental and economic viability, equitable access and responsiveness to community needs.

INSIGHTS FROM COMMUNITY WORKSHOPS

- Concerns around distrust between the community and government.
- Community members have expressed desire to make sure program considers the community's perspectives over time.

INSIGHTS FROM PUBLIC DESIGN DISCUSSIONS

Would like to see if eventually we can get to utility service model. After 5 years, some government organization can support.