Envisioning a World with Less Plastic: Determining the Feasibility of a Reusable Takeout Container System for Hilo, HI
What is an RTCS?
Overview

1. Background
2. Problem Statement
3. One Possible Solution
4. Keys to Success
Background
Waste is a Huge Problem

- 220,000 tons of waste each year
- Hilo Landfill is closed
- West Hawai`i landfill remains
- Searching for solutions that limit waste

(Hawai`i Zero Waste, 2019)
A Day Exploring Solid Waste
The Problem with Plastics

How long til they’re gone?

- Stryrofoam cup: 50 years
- Aluminium can: 200 years
- Nappy: 450 years
- Plastic bottle: 450 years
- Fishing line: 600 years

Exact time will vary by product type and environmental conditions.

Source: NOAA / Woods Hole Sea Grant


(National Geographic, 2018)
Plastic Bans

- Plastic Bag Ban
  - Effective 1/17/2013

- Ordinance 17-36
  - County of Hawai`i bans polystyrene containers, effective 7/1/2019
  - Single-use No. 5 plastic is a common alternative
Problem Statement
There is a plastic waste problem around the world which increases as we continue to use single-use plastics in our everyday lives.
One Possible Solution
A reusable takeout food container system (RTCS) will reduce the amount of single-use plastics used in Hilo, HI.
Methodology

1. Identify stakeholder concerns surrounding the implementation of a program
2. Analyze reusable container systems in similar sized cities to Hilo, HI
3. Incorporate information gathered into information for consumers and restaurants and a business plan for the County of Hawai`i that is specific to Hilo, HI
Objective 1: Survey the Public

Would you be willing to opt into a reusable container program?

- Yes: 74.8%
- No: 2.8%
- Maybe: 22.4%

- 143 responses
- Sustainable practices
- Public knowledge and passion

(Google Forms, 2020)
Objective 1: Interview Restaurant Owners and Managers

- Expense
- Stocking
- Regulations
- Container Tracking
Objective 2: Durham GreenToGo

1. Open source webinar
2. 28 restaurants and 996 containers to start
3. Strong marketing plan
4. Very important to form relationships
How GreenToGo Translates to Hilo

- Workforce cleans, sanitizes, and distributes
- Customer downloads the mobile application and pays fee to join program
- Customer gets food in container
- Customer drops off used container
- Workforce picks up used containers, washes, and redistributes
Objective 3: Deliverables

- Pamphlet for Consumers
- Report for Restaurants
- Business Plan for the County
Keys to Success
You Can Help Reduce Plastic Waste

How?

A How-To Guide on making Hilo a little greener!

A Reusable Take-Out Container System in Hilo

For a small monthly or yearly fee, you could opt into a reusable container system that limits the amount of single-use plastics ending up in Kona’s landfill.

Upon membership, you will be eligible to receive takeout or restaurant leftovers in a reusable, microwave and dishwasher safe container, rather than a single-use, disposable one.

An app will be used to verify your membership when you order, then you’ll be able to pick up your order in a reusable takeout container.

Containers can be conveniently dropped off at one of many locations around Hilo, to then be cleaned and sanitized at the wash station.
WHAT ARE THE PROS AND CONS OF PARTICIPATING IN A REUSABLE CONTAINER SYSTEM?

**Pros**
- Low cost positive advertising for restaurant
- Could save restaurants money on takeout containers
- Increases sustainability
- Attracts new customers to restaurants

**Cons**
- Takes up space to store containers once sanitized
- There is likely an upfront cost
- Sometimes there are flaws in the system (i.e., people who aren’t registered end up with a container)
RTCS - Hilo, HI
Reusable Takeout Container System

- A comprehensive business plan
- Lays out steps for the future
Steps of Implementation

1. Secure Funding for the RTCS
2. Find Restaurants Willing to Participate
3. Begin Advertising
4. Find Workforce to Run the RTCS
5. Establish Partnership with Third Party for a Wash Station
5A. Establish Own Wash Station
1. Create Mobile Application
2. Acquire Dropoff Boxes and Transport Vehicle
1. Secure Funding

- Crowdfunding
- Grants
  - County R&D Innovation in Sustainable Development
2. Find Restaurants

- 5-10 restaurants to begin with
- Temporarily waived participation fee

(Swiftic, 2020)
3. Marketing the Program

- Facebook
- Flyers
- Restaurant advertisements

(Vitec, 2019)
4. Build A Workforce

- Volunteer or Paid
- Work Re-Entry Programs

(Workforce, 1992)
5. Establish Partnership with Third Party

- Inspected Wash Station
- Commercial Sanitizer
- Inspected Dry Station
- Transportation
5A. If a Third Party Partnership Cannot be Established

- Acquire Space - Permitted as Restaurant
- Purchase Sanitizer
- Adapt plan for more fundraising

(Honolulu Magazine, 2016)
6. Create Mobile Application

(Swiftic, 2020)
The landfill in Hilo, HI has closed, leaving all waste generated in the Hilo area with nowhere to go, besides Kona’s landfill. The majority of the restaurants in the Hilo area have a strong takeout culture, which is common for both locals and tourists to partake in. Most restaurants use single-use takeout containers, which contribute largely to the solid waste produced in Hilo. HiloBox has implemented a reusable takeout food container system in Hilo. By joining, you can help make a difference in reducing single-use plastics!

contact@hilobox.com
7. Acquire Dropoff Boxes and Transport Vehicle

Dropoff Boxes
- Secure and clear as to what they are
- QR codes posted on them
- Small slot that is easy for only the containers to fit through
- Local businesses pay to advertise on the sides

Transport Vehicle
- Bicycles with trailers

(QRCODEMONKEY, 2019)
Financials

- Containers
- Sanitizer
- Consumables
- Permits and Inspections
- Drop off and Transport
- Mobile Application
## Financials

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<tr>
<th>INPUT 1</th>
<th>OUTPUT 2</th>
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<tbody>
<tr>
<td># Of New Restaurants Per Month</td>
<td>Breakeven Months Without Wash Station Purchase</td>
</tr>
<tr>
<td>2</td>
<td>6.35</td>
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<thead>
<tr>
<th>INPUT 2</th>
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<tbody>
<tr>
<td>Restaurant Subscription Cost Per Year ($)</td>
<td>Breakeven Months With Wash Station Purchase</td>
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<td>500</td>
<td>19.68</td>
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<tr>
<td>Consumer Subscription Cost Per Year ($)</td>
<td>Breakeven Years Without Wash Station Purchase</td>
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<td>25</td>
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<tr>
<th>INPUT 4</th>
<th>OUTPUT 5</th>
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<tr>
<td># Of Starting Members</td>
<td>Breakeven Years With Wash Station Purchase</td>
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<td>25</td>
<td>1.64</td>
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</table>

| INPUT 5 | |
|---------| | Seed Funding ($) |
| # Of New Members per Month | 10 |

| INPUT 6 | |
|---------| | 5000 |

| |
| Seed Funding ($) | 5000 |
Legal

- An RTCS operates similarly to a restaurant
- Permits
- Regulations
- D.O.H.
Opportunities

- Spread to surrounding towns, possibly even islands
- Multiple wash stations
- More drop off locations
- Break even on initial expenses
- Possibly get more outside funding
Projections/Next Steps

If there is an increase in customer use of RTCS...

- Containers
- Staff
- Sanitizers
- Space
- Container Transportation

...will all need to be increased

(Ianwaring, 2014)
The Conclusion

You Can Help Reduce Plastic Waste

A Reusable Take-Out Container System in Hilo

For a small monthly or yearly fee, you could opt into a reusable container system that limits the amount of single-use plastics ending up in Kona’s landfill.
Acknowledgments

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References

https://durhamgreentogo.com/faq/

Plastics: Material specific data. (2019). Retrieved from:


http://records.co.hawaii.hi.us/WebLink/DocView.aspx?dbid=0&id=980968&page=1&cr=1