Switching to reuse for onsite dining in foodservice

Tips, tricks & considerations

Switching to reusable foodware from single-use, disposable alternatives is something foodservice operators across North America are increasingly considering; whether it be because of policy mandates, a goal to reduce waste, customer pressure, or a desire to save money and time spent on purchasing foodware. For in-house dining or drinking, the concept of using reusable dishes, utensils, and cups is not new and has been the norm until the recent past.

If you are a foodservice operator who has been relying on single-use foodware for your in-house dining operations, the switch to reusables can seem daunting and, like all change, isn't necessarily easy. There are logistics to consider and account for when making the transition and this document aims to address the most common concerns in a meaningful way. Whether you are a caterer, a mobile food vendor, or run a restaurant, café or institutional kitchen, this is intended to provide helpful insights into the logistics and highlight the benefits of making the transition to reusable foodware onsite.

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Contents

We know foodservice operators are busy, so to make the most of this document, use the links below to jump straight to the most relevant sections for your establishment.

We have also created two scenario tables that can help a foodservice operator set expectations around the logistics of implementing reuse in onsite dining operations. The first table outlines expected space and storage requirements, dishwashing staff hours, and number of needed return stations based on both a lower-volume and higher-volume establishment. The second table outlines water consumption based on three dishwashing strategies.

Dishwashing is key to implementing reuse

Dishwashing is a critical component of reuse infrastructure for onsite dining. Restaurants, corporate cafes, airports, coffee shops, bars, etc., reusable foodware needs to be washed.

Many foodservice operators may be able to accommodate an in-house transition to reuse without much increased labor or need to expand dishwashing capacity.

- Fine dining and many casual restaurants serve all their food on site with durable, reusable foodware.
- Most fast casual businesses already use some mix of reusable foodware in their operations, especially for preparing food.

However, dishwashing could be a challenge for the typical fast food establishment, where all packaging is disposable, no commercial dishwasher is installed, and high volumes of customers are served.

- Retrofits or external dishwashing services can help solve the problem.
- Third-party wash services, where available, can be a good option.
- Future fast food businesses should no longer be designed for a throw-away model of onsite dining. Policy in many parts of the world, including municipalities across North America, is beginning to mandate reusables for onsite dining at all establishments — even fast food.

See "Recognizing reuse is not just for fine dining"

image courtesy of Dishcraft

Determining your foodware washing options

In order to calculate what washing will look like for your establishment, you will need to know your daily volume of transactions, staffing availability, type of dishwashing equipment, and space availability. *See scenario tables.*

The first step is to determine whether or not you can wash on site.

Options for washing on site

Three-compartment sink: Most restaurants or foodservice locations use three-compartment sinks for washing their cookware – first soaking in hot water with detergent, cold rinsing in the second compartment, and sanitizing in the third. Three-compartment sinks comply with food codes for washing foodware.[1]

Commercial dishwasher: There are many types of commercial dishwashing machines available. Determine the type of dishwashing apparatus you already have or what you would like to install. *How to Choose a Commercial Dishwasher: A Comprehensive Guide — The Restaurant Authority*

- Consider leasing a dishwasher. Entities like EcoLab or Auto Chlor provide the option to lease a commercial dishwasher. They come in all shapes and sizes to accommodate even the smallest foodservice operator's back-of-house.

Options for those without space or the ability to provide in-house dishwashing

Leverage an existing location with commercial dishwashing capacity. Be creative with finding an available commercial dishwasher. Consider connecting with a house of worship, nonprofit, convention center, university, etc. that may have underutilized washing capacity and could be open to leasing or sharing their space with other establishments in the community.

- Don't Waste Durham, a non-profit third party reuse service provider, leases a local Durham, NC community center's underused kitchen space for dishwashing.

Ask your local health department about a shared use/shared kitchen permit.

Utilize a third-party dishwashing service. They can collect your used dishes, sanitize them, and return them to you clean and ready for reuse. There is also the option to work with a turnkey reuse service provider that provides both reusable foodware and dishwashing services in a centralized model.

- Learn more about reuse service providers and third party wash hubs by visiting Upstream's Reuse Business Directory.

1 Note: In the US, food establishment regulations are set by state food code, which is implemented by county health departments. State food codes may or may not draw from federal guidance from the Food and Drug Administration.

Deciding how many reusables your establishment needs

After assessing dishwashing, the second thing to address is the amount of foodware your business will need on site to meet demand.

- It is recommended to follow a 3:1 ratio, meaning 1/3 of foodware will be on drying racks, 1/3 will be in use, and 1/3 will be getting washed.
- Generally, if you have more staffing or better dishwashing equipment, you'll need less foodware onsite.
- Purchasing sufficient supply and using high-efficiency systems can curb capacity issues and decrease the risk of running out of foodware.
- The amount of foodware an establishment needs is contingent on: 1) volume of transactions; 2) staffing; and 3) dishwashing equipment available.

See scenario tables.

Your volume

Calculate your daily volume of transactions, orders, or meals served. Arrangements should be made for your highest volume day. As a general rule:

- Purchase enough foodware (ideally 150% of daily average transactions) to cover the lunch or dinner rush, so that sanitizing and washing can happen during lulls between service.

Staffing

The key factor to consider is how many hours per day dishwasher staff/labor are available — and your budget for additional staff hours.

- If staff are available all day long for dishwashing, you do not need as much foodware in stock, because it is continually being washed.
- If you only have dishwashing staff available for a few hours per day, or if you're expecting your other staff to wash dishes in between other tasks, you may want to add some padding to your supply.

The fewer the staff hours dedicated to dishwashing, and the smaller the dishwashing equipment, the higher the volume of foodware your establishment should have onsite. Alternatively, the more staffing you have available, the less reusable foodware you will need to have on hand.

See "Accounting for staffing to accommodate increased dishwashing"

Your dishwashing equipment

If you are using a three-compartment sink, either staffing needs will be greater, or you will need a larger amount of foodware.

If you are using a small under-the-counter dishwasher, similar to what is frequently found in bars and small restaurants, you will not be able to wash at a high volume. In this instance, expect frequent or continuous use of the dishwasher to meet your establishment's foodware volume needs, or have a large supply of reusables onhand.

High efficiency dishwashers that are able to reduce staff hours and don't require you to have as large of a supply of reusables on hand.

As a data point, commercial dishwashers used by restaurants that partner with the reuse service provider Muuse are able to fit 25 of their reusable coffee cups per rack. The entire prep, wash, and dry cycle takes approximately five minutes.

image courtesy of Don't Waste Durham

Considering the type of foodware materials you want to utilize

Weight

Determine if weight is an important factor to your establishment. For example, a food truck may opt for a lighter material, such as reusable plastic or stainless steel over heavier (or breakable) materials like ceramic and glass.

Storage space

Evaluate your space constraints. Some reusable foodware is able to nest, while also being stacked, which saves on storage space. Choose your foodware based on your storage needs.

Dry time

Dry times vary by material. Ceramic, glass and stainless steel are able to reach a higher heat, which leads to quick evaporation and as a result fast dry times. Alternatively, plastic reusables take the longest to dry.

Materials to consider

- Ceramic
- Glass
- Stainless steel
- Food grade high-density polyethylene (HDPE)
- Food grade polypropylene (PP)
- Specialty plastics like Tritan, which is platinum rated for material health

It's important to be discerning and *not* select materials that contain chemicals of high concern, as identified by reputable scientific institutions like the Food Packaging Forum or GreenScreen Certified.

Your foodware recovery rate is a key consideration when selecting the material. If your establishment's recovery rate will be very high, it makes sense to invest in the highest quality, most durable foodware, even if it has a greater upfront cost and environmental footprint. High return rates lead to the highest economic and environmental payoff over time.

- *Not sure what your recovery rate will be? See "Striving for high foodware return rates"*

Other factors to consider when selecting a material include longevity, recyclability once foodware has reached its end of its useful life, and conduciveness to use in a high-heat commercial dishwasher.

Review foodware purchasing guides for suggestions:

- Foodware Catalog by Upstream
- Reusable Foodware Purchasing Guide by ReThink Disposable and Surfrider Foundation

Optimizing foodware dry times in order to save on space

Use drying racks that are appropriate for your establishment's foodware, are durable, and are able to roll.

Reduce drying time by allocating space in a lower humidity environment. Food codes generally allow establishments to use industrial fans to better move the air and hasten dry times.

- Check with your local health department to ensure your drying methods are allowable in your state/province.

Consider using commercial dishwashers that have built-in drying features, which can reduce or eliminate drying time.

Measure the footprint of the drying / storage racks your establishment will need and clear that amount of space.

- You may be able to use the storage area previously dedicated to disposable foodware to host racks for drying reusables.
- If you are tight on floor space, consider hanging storage shelves on the wall.

Accounting for staffing to accommodate increased dishwashing

Reuse means collecting and washing foodware, and that can mean increased labor. The number of staff hours your establishment will add due to increased dishwashing needs depends on your volume of customers, the number of foodware items they use, and your turnaround time for washing and drying. For example, if you have a three-compartment sink and need to hand wash items, it can take more staff time than loading an automatic dishwasher. *See scenario tables*

Evaluate the cost of disposables and consider transferring that budget to increased labor needs

Determine how much you are spending on disposables and transfer that cost to increased dishwashing needs, such as paying a person to wash dishes or existing staff to wash dishes, or upgrading your dishwashing equipment.

In dozens of case studies, switching to reuse, even after considering dishwashing costs, has proven to save businesses money every year. *See "Considering potential cost savings"*

Labor concerns

Small and mid-sized foodservice operators do not necessarily need to hire a dedicated dishwashing staff member. Consider adding dishwashing hours into current staff's roles.

Using dishwashing machines, particularly higher capacity units, can decrease the amount of staff time needed.

Increase the number of reusables you have on hand if you have labor shortage concerns, and consider expanding your storage racks to accommodate more foodware. This allows you to wash after hours if need be. *See "Deciding how many reusables your establishment needs"*

Consider whether outsourcing labor to a third party is a potential option for your establishment. *See Upstream's Reuse Business Directory of reuse service providers.*

To ensure proper foodware handling by staff, consider providing training on clean handling procedures. *See "Overcoming any sanitation concerns"*

Striving for high foodware return rates

Reusable foodware is, by design, meant to be used for a long period of time. The more times foodware is reused, the more environmentally and economically advantageous it is.

Return stations, messaging around item return, and how materials are actually retrieved determine recovery / return rates for foodware.

You will need to account for breakage, attrition, and loss. Foodware (particularly utensils) can be lost due to customers inadvertently tossing it into the recycling or trash bin, but there are many strategies to mitigate this concern.

Scenarios where customers order at their table and where staff bus the table provide the highest return rates of foodware for onsite dining. If your establishment has customers ordering at the counter or a table but relies on customers to bus themselves, there can be equally high return rates if you implement the right strategies:

- Consider having your staff bus the tables instead of the customers.
- Be sure to have clear, explicit signage to let customers know where and how they should return their foodware.
- Consider requiring less sorting from the customer. Product loss can be avoided by moving the trash and recycle bins away from the dining area to the "back of the house" and installing customer self-bussing bins in the dining area. This allows customers to place everything in the bus bin – the plates, cups, and utensils, along with food waste and trash. The staff sort everything, ensuring foodware is recovered for future use, while also allowing for better collection of food waste for compost and separation of recyclables.
- Another effective option is to leave compost bins for customers to discard their food waste before placing used foodware in the bus bin. In this case, including clear signage that the compost bin is only for food waste is essential to avoid any foodware losses.

Thinking about water consumption

Reusables *always* hit a break-even point where they outperform disposable alternatives. Depending on the material and foodware item, the environmental break even point is anywhere between 2 and 122 uses.[1] Reusables, which are designed to be used hundreds if not thousands of times, require less water than the production and manufacture of disposable foodware, when used past their specific break even point.[2][3]

Water consumption due to dishwashing can be a concern in places where water supply is scarce and more expensive. These costs depend on your local water utility rates, as well as the volume of dishes you use and the type of dishwashing equipment you have on site.

Installing new dishwashing equipment

If you're installing new dishwashing equipment, it is strongly recommended to get the most water-efficient option possible. Commercial dishwashers today are significantly more efficient than dishwashers of the past. Information on water output for your specific dishwashing equipment is available online.

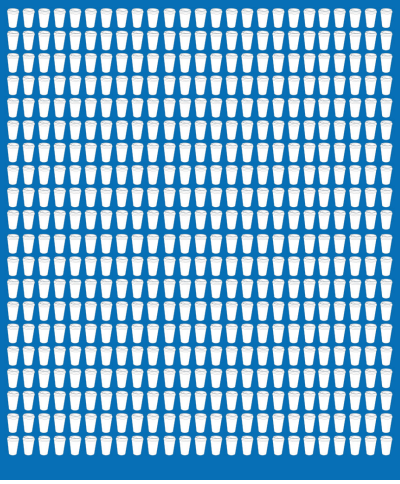
- Typical commercial units consume up to 2.2 gallons (8.3 liters) of water per rack, with highefficiency models consuming 0.95 gallons (3.6 liters) per rack and the most efficient models using as little as 0.75 gallons (2.8 liters) per rack. Most dishwashers use between 2.0 and 7.0 gallons (7.6 - 26.5 liters) per minute for a complete cycle of cleaning and sanitation.[4]
- Energy Star certification provides guidance for selecting the most efficient dishwashers in terms of water (and energy) use.
- The Restaurant Authority has a comprehensive guide and tips to reduce water consumption.

Consider water quality as a factor in your decision-making.

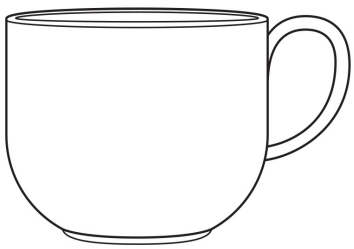
Reuse reduces the demand for more foodware, which drives down water pollution caused by natural resource extraction, production, and manufacturing.[5]

In terms of water quality, refrain from using harmful chemicals when possible. In a three-compartment sink, QUATS sanitizer is less harmful to people and the environment than chlorine, for example. And in cases where you can, choose heat to sanitize (i.e., high-heat dishwashers) instead of using chemicals to sanitize (i.e., low-heat machines).

Using 500 paper cups consumes nearly 370 gallons water



Using and washing one ceramic cup 500 times consumes only 53 gallons of water.



source: Reuse Wins

1 Gordon, M. (2021). "Reuse Wins". Upstream.
2 id.
3 Franklin Associates (2011). "Life Cycle Inventory of Foam Polystyrene, Paper-Based, and PLA Foodservice Products"
4 The Restaurant Authority, How Much Water Does a Commercial Dishwasher Use? A Comprehensive Guide
5 FoodPrint, The Environmental Impact of Food Packaging

Overcoming any sanitation concerns

Reusable foodware is safe

Based on the best available science and guidance from public health professionals, it is known that reusable foodware is safe when employing safe, food code-compliant practices.[1]

Germs and viruses are generally vulnerable to soap, and commercial and home washing systems easily destroy all pathogens with sanitizer and high heat.

Because reusables can be thoroughly sanitized, it makes them safer than their disposable alternatives, which are not subject to sanitization in their supply chains.[2]

How foodware is handled is key to sanitation, whether you are using reusables or disposables. The majority of health issues in restaurants occur from restaurant surface transfer and unsafe handling by employees.

- Disposables are often perceived to be sanitary, but in reality disposables that are handled improperly pose hygienic risks.
- Handwashing is critical, particularly between dealing with dirty foodware/surfaces and clean foodware/surfaces.

Considerations

Foodservice venues should follow appropriate food and foodware handling procedures as put forth by their health department, to ensure customers they are upholding the health of the community.

If patrons of your establishment are concerned about reusable foodware, consider sharing the following:

- Health departments across the country support reusables.
- Reusable foodware must be adequately cleaned and sanitized according to food safety regulations, and foodservice operators are among the most highly regulated businesses in terms of public health.
- Refer any concerned patron to the available health department guidance on reusables in accordance with state food code. Encourage your local health department to put out information for a general public audience, such as these examples from Durham, NC and Alameda County, CA.

Consider these tips for maximizing safety and sanitation:

- Provide staff training on sanitary wash practices. The key is that staff are washing their hands between touching dirty foodware and touching clean foodware. Clean hands are critical – the number one transfer of foodborne illness occurs between handling dirty and clean foodware without washing hands.
- In a fast-paced, high-volume environment where it's challenging for a single person to wash their hands in between handling dirty and clean foodware, the best strategy is to have one person racking dirty foodware and sending it into the dishwasher and another person at the other end racking all the clean foodware.
- Gloves do not necessarily keep things more sanitary — kitchen staff who wear gloves can become less discerning about what they touch or wear gloves improperly.[3,4] Staff also have to change gloves frequently which creates more disposable trash.

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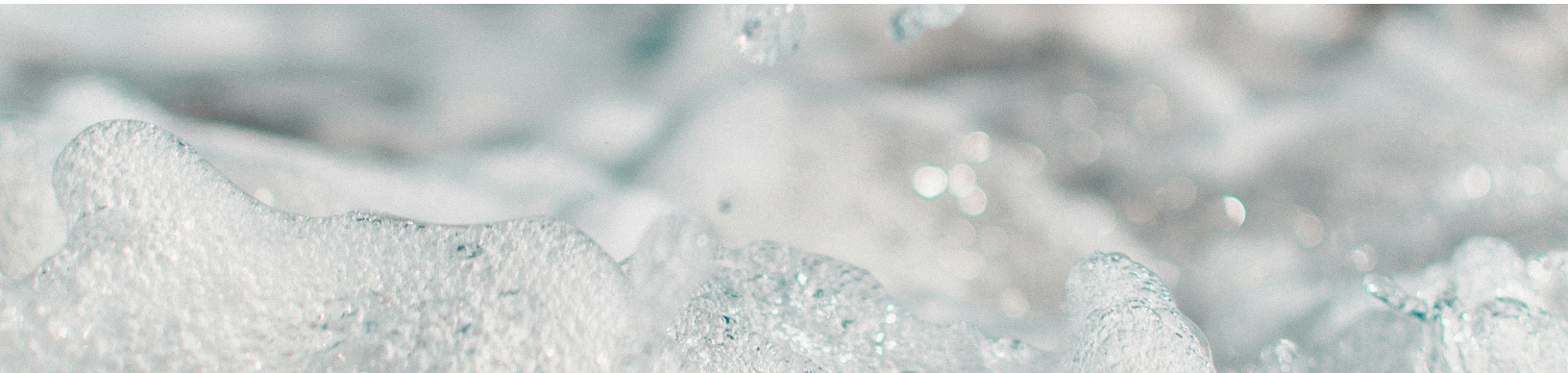
1 Food Code 2022 | FDA
2 Bedford, B., et. al. (2014). "Allergen Removal and Transfer with Wiping and Cleaning Methods Used in Retail and Establishments." Journal of Food Protection 83(7), 1248-1260
3 Orlandohealth.com – Should I Wear Gloves or Just Wash My Hands?
4 Food-Safety.com — Understanding the Glove Risk Paradigm: Part II | Food Safety



Recognizing reuse is not just for fine dining

Any foodservice or beverage establishment can use reusable dishware, regardless of whether it is a cafe, fast casual restaurant, diner, food truck, or full-service fine dining restaurant.

Foodware does not need to be porcelain or china to qualify as reusable. There are more economical options. *See "Considering the type of foodware materials you want to utilize"*

Foodservice operators that have made the transition to reusables in programs like ReThink Disposable are almost entirely casual or quick service dining establishments. See ReThink Disposables' case studies and testimonials for specific examples. *See "Considering potential cost savings"*

In some countries, including specific US and Canadian municipalities, foodservice operators, including fast food establishments, are already implementing reusables for onsite dining.

- Since 2019 and the passage of the Berkeley Disposable Foodware Ordinance, nearly 30 municipalities across the US and Canada have implemented policies mandating reuse for onsite dining.
- Entire countries require reuse for onsite dining, including Chile, France, Taiwan, and the Netherlands.

Reusables for dine-in at McDonald's in France

Reusable breakfast service at A&W in Banff, Canada

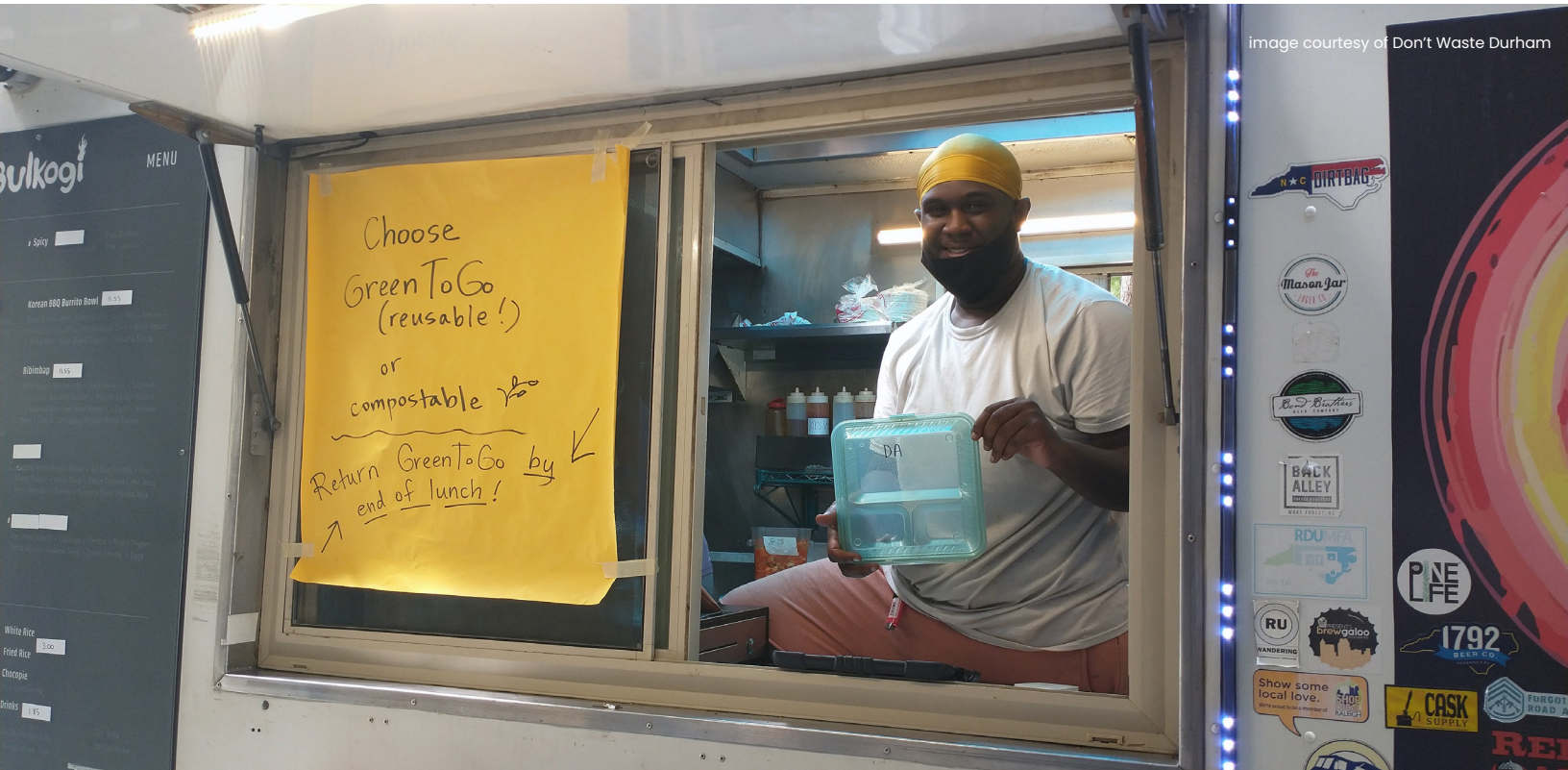


image courtesy of Don't Waste Durham

Considering potential cost savings

Savings accrue over time

Reusable foodware is more expensive up front, and there are dishwashing labor costs and utilities to consider. However, data demonstrates cost savings develop and accrue over time after reducing your purchase of disposable items.

Clean Water Fund's ReThink Disposable program has demonstrated the short-term payback of switching to reusables for onsite dining in over 50 cases of providing technical assistance to food-service operators and gathering cost impact data. Their findings reveal:

- 100% of restaurants and institutional dining operations saved money by switching from single-use to reuse.
- The average savings for a small business are between $3,000 and $22,000 per year, with environmental benefits that include eliminating 110,000 to 225,000 packaging items per business and 1,300-2,200 lbs. of waste annually.

See ReThink Disposable's case studies and a summary of case study savings by business profile.

Paying for reusables

The upfront cost of reusable foodware does not need to be a barrier. Private initiatives and public funding can help cover the purchase of reusables.

- Plastic Free Restaurants provides full subsidies to foodservice operators, including schools, for reusable foodware.
- Check Upstream's running list of local grants/rebates to see if any are available in your municipality (please note, this list is open source and therefore not exhaustive)

With a shift to reuse, foodservice operators can save waste hauling costs and reduce staff hours dedicated to waste management.

- A school in Durham, NC was able to decrease its trash by 80% after making the switch to reusable trays. This freed custodial staff to reallocate time to other tasks and led to a reduction in reported injury and back pain, due to less heavy trash hauling.

Crunching the numbers

You can estimate your break-even point of purchasing reusable foodware by first assessing how much you are spending on disposable product(s) each year. Calculate how many reusable replacements you'll need (ideally 150% of daily average transactions) and divide the total cost of reusables by the annual cost of disposables in order to reach the number of years it will take before your investment in reusables breaks even.

Keep in mind that you will have some loss due to breakage/attrition, which will vary depending on the mechanisms you put in place to maximize the recovery of your reusable foodware. *See "Striving for high foodware return rates"*

Consider utilizing Product Stewardship Institute's foodware calculator to project the cost savings you will achieve by reducing disposables.

Projecting potential time saved on ordering and reduced reliance on supply chains

Reusable foodware is purchased much less frequently than disposable alternatives, saving operators precious time and energy that would otherwise be spent on purchasing.

Global supply chains are volatile, so reducing the frequency with which you purchase supplies and the overall amount of foodware you're ordering allows your establishment to decouple itself from unstable markets.

Marketing your switch to reusables to increase sales

Image courtesy of Surfrider

Research indicates customers prefer sustainable businesses and that people are willing to pay more at restaurants pursuing green practices.

Reusables also provide a superior customer experience overall and elevate the dining experience.[1]

To increase your income and bring more customers to your location, consider promoting your use of reusable foodware.

- Join existing programs like Ocean-Friendly Restaurants or the Green Restaurant Association, which offer certification and marketing support for participating businesses. Check for additional programs in your local community!
- Yelp provides the option to add eco-friendly attributes to your Yelp Page, including the use of "reusable tableware".
- PlasticScore is a crowdsourced, zero waste rating app for restaurants that provides the highest scores to businesses that use reusables.

1 Kuo, P.J., & Barber, N.A. (2014). "Exploring Dishware Influences on Product Evaluation, Willingness to Pay, and Restaurant Type." Journal of Foodservice Business Research 17(5), 369-389

Scenario Tables

Infrastructure projections for various reuse systems

	**Lowest volume day** *daily customers*	**Highest volume day** *daily customers*	**Shelf space** *for plating area + BOH storage for cleans (ft²)*	**Drying racks needed**	**Return stations needed** *(can be bus tubs)*
Lower volume business *e.g., coffee shop*	**150**	**550**	**54.2**	**4**	**3**
Higher volume business *e.g., popular casual chain*	**250**	**1000**	**97.5**	**7**	**5**

Dishwashing projections for a lower volume business

	**Water usage** *gallons/day*	**Dishwashing staff hours required** *hours/day*
3-compartment sink	**130.9**	**8.8**
Under-counter dishwasher	**84.0**	**2.9**
Pull-down dishwasher	**58.1**	**2.9**

Dishwashing projections for a higher volume business

	**Water usage** *gallons/day*	**Dishwashing staff hours required** *hours/day*
3-compartment sink	**218.2**	**15.6**
Under-counter dishwasher	**150.0**	**5.2**
Pull-down dishwasher	**103.8**	**5.2**