SUSTAINABLE PACKAGING:
College Dining Adaptations to COVID-19

REPORT BY
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FOR COMPLETION OF THE ENVIRONMENTAL CONCENTRATION
CAPSTONE AT
Smith College

FOR
Farm to Institution New England (FINE)

May 2021
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SUSTAINABLE DINING DURING & BEYOND COVID-19

This section outlines key findings from interviews and additional research on reducing waste from dining operations regarding three themes: Reusable To-Go Packaging Programs (1. Ready for Reusables), Single-Use Containers (2. Optimizing for Disposables), and Sustainability Metrics in Dining Contracts (3. Negotiating Sustainable Contracts).

1. READY FOR REUSABLES

Reusable packaging programs reduce packaging waste associated with to-go dining operations. A successful reusable container program must choose the right container, establish a robust procedure for loaning and returning containers, and communicate the program effectively. Most commonly, tokens are used to exchange for a clean reusable container.

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<tr>
<td>(1.A) Incentivize Student Participation</td>
<td>Tokens or credits (preferred by students) can be purchased by or given to students on the meal plan to ensure that they are responsible for returning a container before receiving another. Students only need to pay to participate if they lose their first container or token at Smith College. At Massachusetts College of Liberal Arts (MCLA), students pay a deposit to participate, which is paid back at the end of the year.</td>
<td>17, 30</td>
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<tr>
<td>(1.B) Encourage Responsible Participation</td>
<td>Dining directors stressed the importance of effective communication to students so that containers stay in rotation. Dining services at Harvard, Smith, Brandeis, UMass Amherst, and MCLA all use social media, which is useful for promoting new packaging programs. Smith and Brandeis regularly update their signage to reflect dining products on campus.</td>
<td>19</td>
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<tr>
<td>(1.C) Health and Safety</td>
<td>Containers can be returned directly to the dining hall or to an OZZI® Collection Machine (or equivalent) where they are collected and cleaned for reuse. Smith College and MCLA demonstrated that this is possible even during COVID-19.</td>
<td>19</td>
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# 2. OPTIMIZING FOR DISPOSABLES

While reusables are preferred, there are ways to enhance the sustainability of single-use, disposable packaging operations. This focus also includes product databases for avoiding concerned chemicals regarding human health, such as PFAS.

## Key Takeaway

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<tr>
<th>Key Takeaway</th>
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<tr>
<td><strong>(2.A) Consider Compostables</strong></td>
<td>If you have a local industrial composting facility where compostable packaging can decompose, compostable packaging is preferred over recyclable. Certified compostable products are more likely to be free of PFAS and other harmful chemicals found in plastics. Generally, recyclable foodware is challenging to recycle and may end up in a landfill. Smith, Harvard, and Brandeis are all using compostable packaging during COVID-19; Brandeis switched to compostables during the pandemic. However, compostable materials can generate methane if sent to a landfill to anaerobically decompose. It may make sense to opt for recyclable foodware if you don't have access to a composting facility.</td>
<td>23</td>
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<tr>
<td><strong>(2.B) Communicate with Waste Facilities</strong></td>
<td>Communicate with compost and recycling facilities to learn what level of contamination they will accept and to ensure that products purchased can be processed at local facilities.</td>
<td>23, 25, 32, 34</td>
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<td><strong>(2.C) Waste Audits</strong></td>
<td>Brandeis University's Sustainability Director uses purchasing and waste hauling records to monitor university waste. Similar efforts increase transparency regarding waste production on campus and can help assess progress towards sustainability goals.</td>
<td>25, 33</td>
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3. NEGOTIATING SUSTAINABLE CONTRACTS

Operated or self-operated dining services may be interested in incorporating sustainability metrics into future dining service contracts or plans. This focus presents

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Waste audits can look different for each institution, but are useful for evaluating the effectiveness of waste management systems and current waste reduction efforts.\(^2\) If conducted as a research project, they are also an opportunity to enhance student engagement in campus sustainability.

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<th>(2.D) Opt-In Provision of Utensils</th>
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<td>Self-serve utensils at <strong>Smith College</strong> and <strong>Brandeis University</strong> encourage students to be more intentional about taking utensils. When students are not given utensils by default, this reduces the amount of unnecessary utensil packs that are given out.</td>
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<th>(2.E) Promote Student Engagement</th>
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<tr>
<td>Signage and education are important for reducing contamination of waste streams and for encouraging student engagement in sustainability practices. <strong>Brandeis</strong> uses humor in their signage and outreach, which may be more memorable than other techniques for engaging students.</td>
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<th>(2.F) Educate Purchasers</th>
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<td>Navigating “greenwashed” marketing language when purchasing packaging is no simple task. Educate food packaging buyers on desired certifications, brands and on which labels can be misleading (e.g., biodegradable versus compostable).</td>
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<th>(2.G) Minimize Opportunities for Confusion</th>
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<tr>
<td>A mix of compostable and recyclable products make sorting waste more difficult for students and contamination of all waste streams more likely. Additionally, products that are easily identifiable as compostable or recyclable can minimize confusion when sorting.</td>
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\(^2\) Ibid.
an example from Brandeis University and additional resources and examples for incorporating sustainability metrics in Requests for Proposals (RFPs).

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<tr>
<td>(3.A) Include Sustainability Metrics in RFPs</td>
<td><strong>Brandeis University</strong> incorporated sustainability metrics and goals into their dining services by putting out a Request for Proposal (RFP) with new sustainability metrics, including those related to waste reduction.</td>
<td>26, 37</td>
</tr>
<tr>
<td>(3.B) Fee Structure Contracts</td>
<td><strong>Brandeis University’s</strong> contracted dining service transitioned to a fee structure contract, granting university administration greater control over the services provided and increased access to costs and waste disposal details. This added transparency can demonstrate what is required to run a dining program.</td>
<td>26, 37</td>
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0.2 INTRODUCTION

The coronavirus disease 2019 (COVID-19), declared a pandemic by the World Health Organization on March 11, 2020, has had wide-ranging, often unforeseeable impacts around the world. Many college and university students were sent home during the Spring 2020 semester. In Fall 2020, as these institutions planned to reopen, their dining services had to rethink their operating models. As a result, they have allowed for more grab n’ go and takeout options so that students spent less time in dining halls. These adaptations have increased disposable to-go packaging waste, potentially undoing years of work to eliminate waste in dining halls across the region.

Partnering with Environmental Capstone students from Smith College, Farm to Institution New England (FINE) designed this project to achieve three objectives:

- To learn more about the factors driving to-go packaging decisions within college dining services, including:
  - COVID-19 requirements and guidelines
  - Cost, convenience, or product availability
  - Waste management
  - Environmental and human health
- To identify innovative adaptations to decreasing packaging waste during COVID-19, and
- To aggregate resources and best practices for use by FINE’s wider network

To gain perspective on these objectives within New England, this report draws on the experiences of dining and sustainability directors of five higher education institutions in Massachusetts: Brandeis University, Harvard University, Massachusetts College of Liberal Arts (MCLA), Smith College, and University of Massachusetts (UMass) Amherst

Based on our interviews, our findings have been organized into the following three sustainability areas:

1. Ready for Reusables
2. Optimizing for Disposables
3. Negotiating Sustainable Contracts

Each focus spotlights activities at key schools, the impacts of COVID-19 on their dining services, innovations, and plans for post-COVID-19 dining operations. Along with sharing the uncovered best practices, each focus section is followed by additional

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Throughout our research, we aimed to answer the following questions:

- To what degree has COVID-19 impacted waste streams?
- How can environmental sustainability remain a priority in uncertain times?
- In situations where sustainability cannot be prioritized because of external pressures, how have colleges worked to address their existing sustainability goals or set new ones?
- What do dining directors want sustainable dining to look like after COVID-19?

0.3 METHODOLOGY

Students from the Environmental Capstone at Smith College drafted interview and survey questions with the help of directors at FINE. These questions were aimed at understanding packaging waste operations and innovations prior to and after COVID-19.

Five 30-minute interviews were held using the video conferencing application Zoom. Interviews mostly covered qualitative data collection.

Survey questions, which can be found in Appendix B, collected quantitative data and were designed to take approximately 15-minutes to complete. The survey was built in Qualtrics and emailed to the respondents as a follow up to the interview.

FINE selected nine colleges and universities in Massachusetts to reach out to for the study. These schools varied based on student population size, dining service operation type (self-operated vs. contracted), and prior-to-COVID-19 sustainability programs. Emails were sent to dining directors and product and sustainability managers. Five schools were available to participate in the study.

Responses from the interview and survey were analyzed and synthesized into the charts, figures, and foci that make up the report’s recommendations.
0.4 RESULTS

Quantitative results from both the survey (n=4) and anecdotal data given in interviews are displayed here (n=5). Overall, these figures indicate how COVID-19 has impacted baseline operations at responding institutions.

OVERVIEW OF DINING SERVICES DURING COVID-19

Since students were sent home during Spring 2020, the number of students on meal plans and the number of meals served across campuses has gone down. The specifics for two schools surveyed can be found in Figures 0.4.1 and 0.4.2. All respondents reported dining hall closures since the start of the pandemic (Figure 0.4.3).

Despite a decrease in dining volume, the food cost per plate at Harvard and Smith increased by 133% and 46% respectively. This is partially due to the reduced efficiency of operating too many dining halls compared to the now lower volume of meals being served, as well as the recurring cost of purchasing disposables and price increases due to increased demand during the pandemic.

Figure 0.4.1 Volume at Dining Services Fall 2019-Spring 2021

(A) The average number of meals served at Harvard University Dining Services (HUDS) decreased from 13,000 in Fall 2019 to 3,000 in Spring 2020 when COVID-19 began. The number of students on the meal plan decreased from 6,600 to 600. In Fall 2020 and Spring 2021 the number of students on the meal plan increased slightly to 4,000 meals per day and 1,500 students on the meal plan.

(B) The average number of meals served at Smith College Dining Services decreased from 5,500 to 3,000 in Spring 2020. The number of students on the meal plan decreased from 2,350 to 600 in Spring 2020. In Spring 2021 4,000 meals were served per day with 1,500 students on the meal plan.
IMPACTS OF COVID-19 ON TO-GO PACKAGING AND WASTE

Survey respondents reported a variety of adaptations related to packaging operations since the start of COVID-19. Due to nationwide demand for COVID-safe single-use packaging, barriers included increased cost and limited availability of desired products. Harvard and Smith were able to maintain their basic packaging operations from before the pandemic. MCLA, Brandeis, and UMass Amherst encountered more severe challenges when it came to purchasing to-go packaging and waste management.

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4 Studies show that properly sanitized reusable packaging does not increase the risk of COVID-19 transmission (Rethink Disposable, 2020).
**Figure 0.4.4 To-Go Packaging Materials Before, During & After COVID-19**

This graph shows foodware packaging used in dining operations at Harvard University, Smith College, Brandeis University, and UMass Amherst before, during and after COVID-19. Harvard did not report on packaging plans for after COVID-19 in the survey, but did indicate interest in starting a reusable to-go program in the future.

**Figure 0.4.5 Challenges Related to Food Packaging During COVID-19**

This bar chart shows that all challenges (high cost, waste management, reducing environmental impact, labor requirements, product availability, and resistance to reusables) were of minor or major concern to at least three of the four respondents. Waste management was the only major concern for all four respondents, although product availability was also a high concern for most schools. This is followed by high cost and environmental impact.

**CHALLENGE: WASTE MANAGEMENT**

Specific waste stream data was limited across all respondents, however we received anecdotal data on the big picture of dining waste during the pandemic. There were two main concerns precipitated by COVID-19.
related to waste management. First, there were gross increases in the amount of waste or waste per student produced at these institutions due to increased purchases of single-use products. This waste needed to be sent off campus without overloading local facilities. Additionally, students were no longer eating and disposing of dining waste in the dining halls. This meant that waste was distributed in unpredictable and sometimes unregulated locations across campus. Brandeis University and Smith College attempted to address this by introducing compost bins into residential buildings. However, the distribution of waste across campus made contamination and improper disposal high concern issues.

**Figure 0.4.6 Dining Waste at UMass Amherst During COVID-19**

![Pie charts](image)

The pie chart on the left represents the reported number of students on campus at UMass Amherst during the first full academic year during COVID-19. The pie chart on the right shows that 100% of the waste being produced before COVID-19 was still being produced by the reduced student body. Three times the amount of waste was produced per student during COVID-19 as compared to a non-pandemic school year.

**Figure 0.4.7 Packaging Waste at Brandeis University**

![Pie charts](image)

The two rows of pie charts compare food packaging waste produced at Brandeis University during Fall 2019 (100%) and Fall 2020 (476%). There were 33% fewer students on campus during Fall 2020 (2000) than during Fall 2019 (3000). The average student during COVID-19 produced 10 lbs of packaging waste compared to 1.4lbs/student prior to COVID-19.
0.5 DISCUSSION & CONCLUSION

The recommendations in this report highlight innovations and best practices that can guide college dining services and similar institutions to making the most sustainable choices with their purchasing power.

Focus 1. Ready for Reusables shows that returns on the initial investment in reusable containers is fast and that reusables offer savings for institutional dining and businesses when compared to purchasing single-use products.

Focus 2. Optimizing for Disposables gives recommendations for selecting the most sustainable single-use packaging available and managing waste so that materials such as compostables and recyclables get properly renewed by waste processing facilities.

Focus 3. Negotiating Sustainable Contracts presents Brandeis University’s work to introduce dining waste reduction sustainability goals into their new private dining contract.

THE COMPLEXITIES OF “SUSTAINABLE” SINGLE-USE PRODUCTS

New environmentally-friendly single-use packaging materials are still in development or just entering the market. As supply and competition in this industry grow, packaging made from materials such as sugar cane, seaweed, and corn, rather than petroleum, are becoming more accessible. These products are known as either bioplastics or plant-based plastics (PLA). In a study sponsored by Coopbox, it was found that almost 50% of food and packaging industry specialists are not fully aware of new packaging technologies.\(^5\) This is also true of consumers. Even so, disposable bioplastics are as ideal a solution as they are marketed to be.

\(^5\) Guillard et al., 2018

“Greenwashing” describes how companies falsely market products as good for the environment by using words such as biodegradable, compostable, and bioplastic (PLA) without additional context or definition. Additionally, most consumers remain unaware that biodegradable plastics are not always compostable. Additionally, compostable plastics are not always easily compostable. Compostable plastics, unless specified otherwise, have to be composted in industrial facilities. However, in the United States, very little PLA food serviceware is composted or it does not degrade fast enough for commercial composters, resulting in it being screened out and sent to landfills.\(^6\)

\(^6\) Sheehan, 2017, p. 2
These complexities amplify the importance of communication and education of product purchasers.

In regards to greenwashing of bioplastics, the company NatureFlex is creating a cellulose based eco-film which allows for composting and complete consumer customizability. The bioplastic is marketed as better than petroleum-based plastics because it will not break down into toxic microplastics. However, what is left out of the marketing language, is that when it decomposes it makes soil and water acidic. Additionally, if most bioplastics are not exposed to sunlight or heat they do not break down. This means that if they are buried underground in a landfill they will produce methane, a greenhouse gas. Another massive issue with bioplastics (i.e., cellulose, starch) is that their production contributes to problems caused by large-scale agriculture.

ROOM FOR INNOVATION

Products made from algae and seaweed have lower environmental impacts but are more expensive due to the high cost of algal and seaweed farming. The UK-based company, Notpla, creates seaweed-based plastic products that “degrade like fruit but perform like plastic.” Some of the packaging are even edible! This alternative seems ideal compared to others due to its fast decomposition rate (4-6 weeks) and long refrigerated shelf life (2-3 weeks). The availability and price of algae-based plastics makes implementing them at the college campus level challenging. But in collaboration with other academic departments, these challenges could potentially be explored and tested.

There is no quick solution to the plastic crisis, and many scientists suggest that recycling and reusing these packaging materials is the most significant thing people can be doing right now. Any plastic products designed for one-time use do not prioritize the environment. Consumers should aim to purchase products from companies that consider the product’s entire lifecycle when advertising its impact.

FUTURE DIRECTIONS

Beyond FINE’s network of farms, schools, colleges, hospitals, and correctional facilities, this report has relevance to restaurants, cities and any business or individual looking to make their packaging purchases more sustainable.

When purchasing to-go food packaging, it is important to consider the whole life cycle of the product being purchased. Specifically, be careful when researching product material ingredients, and avoid companies that are not straightforward about the necessary requirements for their product to break down. Additionally, the PFAS databases included in Part 2: Resources can

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7 Fairs, 2019
8 Notpla Shop
9 McClendon, 2010
facilitate the research that should be done related to foodware purchasing.

Finally, while a comprehensive food packaging sustainability evaluation model does not yet exist, there are several other tools that can be useful. A life cycle analysis (LCA), for example, is important to include when creating cost-benefit analyses. LCAs list the environmental and other impacts of products at every step of their life cycle, from production and transportation to use and disposal. Not many products have been evaluated in this way, but purchasers can request information from suppliers and manufacturers to demonstrate the importance of life-cycle considerations.

Other important considerations, which are discussed in more detail throughout the report include: the material type (petroleum-based, plant-based, etc.), how many times the product can be used, and how long the material will take to break down given local waste facility capabilities.

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10 SPLC, 2020
11 ibid.
PART ONE: RECOMMENDATIONS
1.1 READY FOR REUSABLES

This section highlights reusable to-go program best practices prior to and during COVID-19 at Smith College, Brandeis University, and MCLA.

In the United States, 139 million tons of waste are estimated to be produced each year.\textsuperscript{12} College dining services contribute to this number significantly. Reusable to-go container programs on college campuses have the potential to cut down massively on waste, carbon emissions, and even operational costs.\textsuperscript{13} Unfortunately, due to measures to reduce the spread of COVID-19, universities across the country have observed large increases in food packaging waste generated by the increase in to-go meals. As of Spring 2021, Brandeis University in Waltham, Massachusetts observed a nearly five-fold increase in to-go container waste compared to Fall 2019 (see Results Figure 0.4.7). In Fall 2019, they were able to use reusable to-go containers. As dining facilities adapt to a future beyond COVID-19, it is important that they adopt new and return to former waste reduction efforts, such as reusable to-go container programs.

\textsuperscript{12} EPA, 2021  
\textsuperscript{13} Haber et al., 2020, p. 2

MAKING THE CASE FOR REUSABLES

The COVID-19 pandemic has resulted in many colleges halting their programs, including some that we interviewed. Fortunately, health experts have determined it is safe to use reusable packaging as long as containers are properly sanitized.\textsuperscript{14} Listed in Table 1 (below) are some benefits to installing reusable container programs. In Table 2 (below) there are important considerations for evaluating how reusables could be implemented at your institution.

PRE-COVID-19 REUSABLE SUCCESS

SPOTLIGHT ON BRANDEIS UNIVERSITY

Brandeis University’s reusable container program uses tokens in exchange for a to-go box. Dirty containers can be returned for a token and are cleaned in the dining halls. This process was advertised to students, whose buy-in was essential for the program’s success prior to COVID-19. In Fall 2020, all dining shifted to take-out only. As a result, Brandeis observed an increase in food packaging waste from 4,200 lbs in Fall 2019 to over 20,000 lbs. This nearly five-fold increase occurred with 1,000 fewer students on the meal plan.

\textsuperscript{14} FDA Best Practices, 2020.
SUSTAINABLE SOLUTIONS DURING COVID-19

SPOTLIGHT ON MCLA

Prior to COVID-19, MCLA had retail to-go options during the day, which involved single-use to-go packaging. In the evenings, only students with scheduling conflicts were able to take food to-go; these students participated in a small reusable to-go program.

### Table 1

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<th>Benefits of Reusables</th>
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<td><strong>Durability</strong>: much longer lifetime than single-use packaging</td>
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<tr>
<td><strong>Reduced environmental impact</strong>: including reduced emissions from packaging, production, and waste transport, and reduced contributions to landfills</td>
</tr>
<tr>
<td><strong>Saving Money</strong>: Fewer ongoing fees for hauling waste and disposal product costs</td>
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If you already have a dishwashing labor source, transitioning from disposables to reusables can occur without additional labor costs. Once the initial investment is returned, cost savings will increase with each use.

15 Chiang et al., 2018

### Table 2

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<th>Important Considerations</th>
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<td>Identify and engage stakeholders early in the process (i.e. food contractors and vendors, sustainability employees, waste staff, marketing staff, students, etc.)</td>
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<tr>
<td>G.E.T., manufacturer of ECO-Takeouts, reports that the annual replacement rate is 10-20%. 17</td>
</tr>
<tr>
<td>The return on investment will not be greatly impacted by energy, soap, and water costs associated with washing.</td>
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<tr>
<td>Plan to develop training for faculty/staff.</td>
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During COVID-19, MCLA expanded their reusable to-go container program to include additional students. Aramark, which manages MCLA’s dining services, initially purchased 20 reusable clamshell containers to test the program. The dimensions of these containers were 8x8x2.5.” After the program became “super successful” according to Dining Services Production Manager Renee Royal, they ordered additional containers.

**1.A Incentivize Student Participation**

Students can make a $5 deposit to get a large reusable clamshell or a $3 deposit for a smaller soup container. When

16 Ibid.
17 G.E.T. Enterprises, 2020, p. 6
returning the containers at the end of the year, students get their deposit money back (or on their meal swipe card). Throughout the semester, dirty containers are returned to the dining hall by students to be washed and a new one is given to them.

Photo 1: Reusable container options offered at OZZI’s Source

SPOTLIGHT ON SMITH COLLEGE

Prior to COVID-19, Smith College had established a similar system to Brandeis, which required that students give a token to a dining hall worker in exchange for a reusable plastic clamshell. Students on the meal plan received a token automatically at the beginning of the school year. If they lost the container or token, they had to buy back into the program for $5. Dirty containers were returned to one of three collection machines. See Figure 2 (below) for a summary of Smith College’s pre-COVID-19 Grab & Go program.

In Fall 2020, reusable to-go packaging was not offered. For Spring 2021 during COVID-19, Smith College established four modes of operation (blue, red, yellow, green) with varying levels of restriction. In green mode, two sizes of reusable clamshell to-go containers (OZZI 8x8x2.5” and Eco-Takeouts 4.75x4.75x3.25”) were used for some menu items as well as reusable coffee mugs. During COVID-19, students did not need tokens to take containers.

In the future, Smith College Dining Services is interested in introducing more variety in reusable to-go containers.

Additionally, physical tokens may not be the perfect solution. According to a survey given at Smith College in 2018, 59% of students surveyed lost their token at least once and only about half paid for a new token to continue using the program. Additionally, 73% (n=93) of students agreed they would rather use an electronic token system.\(^\text{18}\)

Figure 1: OZZI Container Student Model\(^\text{19}\)

\(^{18}\) Suslovic, 2018, p. 17-20
\(^{19}\) OZZI, n.d.
SUSTAINABLE STUDY HIGHLIGHT

SPOTLIGHT ON UMASS AMHERST

During Fall 2019, UMass Amherst began conducting a research project in preparation for the pilot of a reusable to-go container system on campus in collaboration with Sustainability Director Kathy Wicks. They conducted student surveys and focus groups.

In the long run, UMass Amherst envisions issuing participating students a credit on their UCard. Upon entry to the dining hall, this could be exchanged for a reusable to-go container.

Students would return the container to the dining area and receive the UCard credit back. Dining services would then clean the used containers and enter them back into circulation. The study authors estimated that implementing a reusable container program would save the university $55,510 on single-use containers each year.

Student engagement is important to the successful launch of a reusables program. Positive feedback from the students UMass Amherst surveyed in Fall 2019 suggests that UMass Amherst students will support a pilot program: 72% of the 2,221 students who responded to a perception survey given at the Grab’n Go station at Berkshire Dining Commons (DC) said that they would be “likely” or “very likely” to participate in such a program.20

**Figure 2:** Smith College Grab & Go How To for Students21

(1.C) Health and Safety

Wicks reported that the program under development needs to align with food safety regulations, including precautions in place during COVID-19.

A new group of students have been engaging with public health and safety staff on campus, and the project’s comprehensive food safety plan is being updated.

The pilot is currently planned for the 2021-22 academic year and would start with one grab-and-go DC. To bring the program to the entire campus, roll-out is expected to happen differently in each of the five DCs on campus because of their unique operations.

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20 Haber et al., 2020, p. 3
21 Suslovic, 2018, p. 8
During the pandemic, in Spring 2021, students were officially invited back on campus and provided a fabric grocery bag. During blue mode each meal was only available for pickup in a single-use paper bag. After shifting from blue to green mode, Smith students could bring the bags provided or their own reusable bags. As soon as the behavior was deemed COVID-safe, this reduced single-use waste.
1.2 OPTIMIZING FOR DISPOSABLES

This section highlights the variety of ways in which Smith College, Brandeis University, and UMass Amherst balanced requirements to use single-use products with sustainability goals during COVID-19.

- **Smith College** established four modes of operation during COVID-19 (blue, red, yellow, green) with varying levels of restriction. In blue and red modes, dining services prepare meals in single-use, compostable packaging.

- **Brandeis University** worked within their new dining contract to switch to compostable packaging and limit food packaging waste where possible.

- **UMass Amherst** shifted from compostable to recyclable to-go foodware. Even before COVID-19, their compost facility could not process all of their compostable waste.

Disposable to-go containers are not the most sustainable packaging solution when compared to reusable containers. Yet in many cases disposable containers are still a necessary part of dining operations.

In order to help navigate the operational challenges and possible environmental impacts of packaging waste, this case study features some best practices when opting for disposables. The accompanying recommendations in Section 2.2 pull together additional best practices and considerations for making the best to-go food packaging choices.

### SINGLE-USE UTENSILS

During the COVID-19 pandemic, to-go meals became the norm, and single-use utensils were necessary for students eating outside of dining halls. For schools that offer food to-go during COVID-19 and beyond, the decision on the type of utensil to offer and how to give them to students is important.

While reusable utensils are best, it may not be cost effective to allow them to leave dining halls with to-go orders. Smith College and Brandeis University offer examples of methods of providing utensils to students which help reduce waste.

#### (2.D) Opt-In Provision of Utensils

**Smith College**

In the green operating mode, utensils are not automatically given to students when they get their meals and are self-serve only. Individually-wrapped compostable utensils are located near the pick up lines for students to take only if they need them.
Prior to COVID-19, dining services at Brandeis University automatically gave students utensil kits whenever they requested a new reusable container. Students reported collecting an excess of these packets and although they could politely decline, it was easier to accept them each time they were offered.

A positive shift as a result of COVID-19 and the new sustainability measures in Brandeis’ contract with Sodexo was the introduction of single utensil dispensers with compostable utensils.

Sustainability Programs Manager Mary Fischer reported that this option had not been well-advertised, but was offered through Dixie. Fischer also reported that the students have given positive feedback regarding the change. While these compostable plastics contribute to single-use waste, this compostable self-serve option is an improvement over plastic utensils.
SINGLE-USE FOODWARE BEST PRACTICES

SMITH COLLEGE
In two of Smith’s four operating modes during COVID-19, reusable containers are not permitted; this includes reusable bags for picking up food (paper bags are used). According to Dining Director Andy Cox, the college is eager to move away from a system that requires so many single-use items due to the ongoing costs and environmental impact. However, Smith College’s back up plan for using compostables can serve as an example for schools who are not yet able to implement reusables.

(2.A) Consider Compostables
After general food safety, Smith College prioritized the environmental impact of packaging over cost, choosing primarily compostable products over non-compostable or recyclable items.

Intentional Packaging Usage: Smith College identified common meals and proposed the food packaging item to use for serving it to ensure that non-compostable packaging is only used where necessary across all campus dining halls.

Figure 1 (below) shows the waste stream breakdown of foodware used for 68 representative meal items offered by Smith College dining halls. Foil wraps, which are used for many sandwiches and burgers, account for most of the landfill category. The chart excludes napkins, utensils, beverage cups and bottles. It also excludes portion control packets such as condiments and dressings, which belong to the landfill category.

(2.B) Communicate with Compost Facilities
Smith College identified a new composting facility and confirmed that it would be able to handle the chosen compostable products. They purchased BPI certified products (see 2.2 Resources).

BRANDEIS UNIVERSITY
As of March 2021, reusables were not permitted even for students who were able to dine-in. As a result of the new sustainability measures Brandeis incorporated into their contract with Sodexo, they are using compostable foodware products and utensils.

Retail Location Opt Out: In the app that students use to order from retail locations, there is an option to opt out of receiving utensils or a paper bag.
Figure 1: Shows the waste stream breakdown of service ware used for 68 representative meal items offered by Smith College dining halls. Napkins, utensils, beverage cups and bottles, and portion control packets are all excluded.

Fischer shared that greenwashing of packaging products and other complexities makes buyers susceptible to making costly mistakes. For example, Brandeis University Dining Services purchased many bags misleadingly labeled as “biodegradable” for their take-out operations in Fall 2020. These were labeled “degradable” but were not commercially compostable (BPI certified). Fischer has maintained close communication with Brandeis buyers to resolve confusions such as these. Brandeis has since switched to paper bags.

(2.F) Educate Purchasers

Signage and Education Efforts: The college has engaged in the education of freshmen and other students to ensure proper sorting of compostable waste to avoid loads being dumped by the hauler. This included lawn signs and videos to show what is compostable. They also have a very in depth online Guide to Take-Out Packaging with directions on how to dispose of all products used on campus. Fischer reported that these efforts resulted in fewer rejected bins.

(2.G) Minimize Opportunities for Confusion

Mitigating Contamination
- All waste stations have three waste streams (trash, recycling, compost)
- Color coded signage
- Signage includes specific items from the dining halls for easy sorting.
- They use area-focused education because haulers will not pick up specific area bins that are contaminated.
Shortly prior to COVID, a third-party organization made recommendations that UMass Amherst Dining Services shift away from sending compostable containers to Martin’s Farm in Greenfield, MA because the farm was overwhelmed and it was unsustainable in the long run. The organization suggested looking into biodigestion or reusable containers in the future. In the meantime, UMass Amherst shifted to recyclable containers to eliminate the compostables. They hope that this can be a potentially non-landfill waste stream until the shift to reusables. Research and planning to pilot a reusable take-out container program was started in Fall 2019 and is ongoing.

This shift from compostables demonstrates the importance of being in communication with compost and other waste facilities to determine that foodware products can be processed effectively. The capabilities and limitations of compost facilities are case specific (2.B. Communicate with Compost Facilities).

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22 Brandeis University, n.d.

23 Ibid.
1.3 NEGOTIATING SUSTAINABLE CONTRACTS

This section highlights how Brandeis University introduced measurable sustainability goals into a new short-term food service contract with Sodexo.

BRANDEIS UNIVERSITY

Brandeis University Dining Services is operated by Sodexo. In 2019, Brandeis and Sodexo agreed to rebid a contract. In December 2019, meetings with vendors and research began. The Request for Proposal (RFP) required the new contractor to meet certain sustainability standards related to food and waste, which were absent in the previous contract. Contractor presentations were scheduled for March 2020, but were interrupted by COVID-19 closures. The university had to adjust and decided to sign a shorter contract with Sodexo, set to last until June 2022. The new dining contract includes eight measurable sustainability goals, including goals to reduce the carbon footprint of food, support New England agriculture, and reduce waste. As a result of signing the new contract with Sodexo, Brandeis has been able to incorporate some new sustainability practices into their dining services even amidst the COVID-19 pandemic. Additionally, a shift to self-operating after this shortened contract is possible because the new fee contract structure is serving to strengthen “the University’s understanding of running the dining program.”

INTRODUCING NEW SUSTAINABILITY METRICS

According to The Justice, the independent student newspaper of Brandeis University, the new contract that Brandeis signed with Sodexo is a management “fee contract” meaning that Brandeis has more responsibility in specifying the program provided by Sodexo. The Director of University Services, Jeff Hershberger, noted that the “fee structure type contract gives the University a little more insight in regards to its own dining program.” University leadership is able to have greater involvement and there is an increased level of reporting with regards to purchases. This includes food packaging purchases which have been used by Mary Fischer, Sustainability Programs Manager, to monitor packaging purchases and waste production during COVID-19.

This new level of control is being used to monitor and measure improvements

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24 Gould, 2020
25 Ibid.
relating to eight sustainability metrics incorporated into the dining contract. The last four metrics set by Brandeis University relate to reducing waste. Metric 5 (Waste Reduction), currently on hold due to COVID-19, is to reduce waste disposal by total weight and/or on a per-meal-served basis. Brandeis plans on measuring this through detailed monthly reports from waste haulers. Metric 6 (Recyclables) aims to eliminate loads of recyclables that are rejected by waste haulers because of contamination. Metric 7 (Waste Diversion) aims to meet certain rates of recycling and composting in two main dining halls. The final metric (Disposables) aims to reduce the number of single-use items used; this is also on hold due to COVID-19.

### Table 1
Adapted from a webinar hosted in March 2021 by Mary Fischer, Sustainability Programs Manager of Brandeis University, this table summarizes the four new sustainability metrics related to waste reduction in the new contract with Sodexo.*

<table>
<thead>
<tr>
<th>Sustainability Metric</th>
<th>Description</th>
<th>Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Reduction*</td>
<td>Changes in bulk waste disposal, quarterly in total weight and/or on a per-meal-served basis</td>
<td>Change from Spring 2020</td>
</tr>
<tr>
<td>Waste Diversion</td>
<td>Changes in recycled and composted waste rates</td>
<td>30% Compost 20% Recycled</td>
</tr>
<tr>
<td>Recyclables</td>
<td>Rejections due to contamination</td>
<td>0 rejections by waste hauler</td>
</tr>
<tr>
<td>Disposables*</td>
<td>Reduction in single-use items</td>
<td>Change from 2019</td>
</tr>
</tbody>
</table>

*On hold during COVID-19

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Fischer, 2021
2.1 READY FOR REUSABLES

This section provides resources for campuses seeking ways to improve their existing reusable program or start a program.

2.1.1 CHOOSING THE RIGHT REUSABLE CONTAINER

Below are examples of the reusable containers and products that are offered by different companies. The purpose of providing these resources is to provide options for different types of containers and products so that each campus can determine which company is best for them to be purchasing from. When choosing the right container it is important to consider:

- Environmental safety (recyclable material)
- Human health (free of PFAS and other chemicals)
- Lifetime of container

OZZI CONTAINER

The most frequently used container in our study is the OZZI Clamshell container with a lifetime of ~1000 dishwasher runs. These containers work well, but if there are no internal dividers it can be difficult to carry all the food needed and can result in multiple containers being used.\(^{27}\) Note that the company appears to currently dominate the market space, offering additional products that are used in conjunction with their containers to facilitate an efficient reusable program.

Figure 1: This figure displays how the OZZI machine works, back and front end. Each machine can hold up to 125 containers; when full the machine will display an alert. It then needs to be emptied. For students, they insert a dirty container and receive a token, which can be exchanged for another clean to-go container.

The OZZI machine can be used to minimize person-to-person interaction. The machine is quite effective and has the potential to be especially useful during COVID-19 times. Smith College was using the machine prior to COVID-19, but stopped during the pandemic. It is marketed by OZZI as easy to use, easy to clean, and self operational. If any technical errors arise,
the machine will send the report to the OZZI tech team.

ECO-TAKEOUT CONTAINER

The Eco-Takeout containers are made with recyclable plastic and are 100% BPI certified. They are also break and leak resistant, with a lifetime of ~1000 dishwasher runs. They offer many container options and all containers are customizable with logos if desired.

Photo 1: Eco-Takeout Container

2.1.2 IDEAS FOR ENGAGING STUDENTS

- Include free dining credits/give out tokens to new students
- Include education about the program on social media, online, in a dining services app and/or around campus
- Incorporate humor into flyers/slogans (Smith student suggestion)
- A celebratory event at the end of the year for a container/token return (e.g., games, snacks, prizes)

Photo 2: Student Engagement example at Smith College from Spring 2021

2.1.3 MAKING THE CASE

COMPARING REUSABLE PRODUCTS

Figure 2 (below) displays a reusable packaging comparison by Smith College Dining Services. As mentioned above, OZZI has the most variety of container options available, second to Eco-Takeout Containers by G.E.T. Note that 8,000 OZZI 15oz. Hot/Cold Cups, equivalent to one case of Sun Roaster Coffee Mug/Cups, would cost $32,800.00.

G.E.T. Enterprises, 2020

Sustainable Smith, 2021
CONDUCT YOUR OWN COST-BASED ANALYSIS

When considering switching to reusables from disposables, a cost calculator tool created by ReThink Disposable can help you determine the annual usage and cost of disposable foodware items and projected cost savings that can be achieved by implementing a reusable substitution.\(^\text{30}\)

The calculator or worksheets in their *Reusable Food Serviceware Guide* can help to identify:

- Implementation costs
- Financial impacts
- Payback period (number of uses required for initial investment to be returned)
- Projected annual savings

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\(^{30}\) [http://www.rethinkdisposable.org/foodware-calculator](http://www.rethinkdisposable.org/foodware-calculator)

\(^{31}\) Powell, 2015, pp. 18-19

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<table>
<thead>
<tr>
<th>Product</th>
<th>OZZI Each Cost</th>
<th>Case Size</th>
<th>Case Cost</th>
<th>GET (Eco-Takeout) Each Cost</th>
<th>Case Size</th>
<th>Case Cost</th>
<th>Sun Roaster Coffee Mug/Cup Each Cost</th>
<th>Case Size</th>
<th>Case Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>8x8</td>
<td>$4.10</td>
<td>50</td>
<td>$205.00</td>
<td>$2.88</td>
<td>12</td>
<td>$34.51</td>
<td>$3.09</td>
<td>12</td>
<td>$37.04</td>
</tr>
<tr>
<td>8x8 3-Compartment</td>
<td>$4.10</td>
<td>50</td>
<td>$205.00</td>
<td>$2.88</td>
<td>12</td>
<td>$34.51</td>
<td>$3.09</td>
<td>12</td>
<td>$37.04</td>
</tr>
<tr>
<td>Soup Container, 12 oz.</td>
<td>$3.59</td>
<td>50</td>
<td>$179.50</td>
<td>$1.69</td>
<td>12</td>
<td>$20.30</td>
<td>$3.09</td>
<td>12</td>
<td>$37.04</td>
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<tr>
<td>Soup Container, 16 oz.</td>
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<td>50</td>
<td>$179.50</td>
<td>$1.69</td>
<td>12</td>
<td>$20.30</td>
<td>$3.09</td>
<td>12</td>
<td>$37.04</td>
</tr>
<tr>
<td>5X5* Single Entree</td>
<td>$2.35</td>
<td>50</td>
<td>$117.50</td>
<td>$1.69</td>
<td>12</td>
<td>$20.30</td>
<td>$3.09</td>
<td>12</td>
<td>$37.04</td>
</tr>
<tr>
<td>6x9 Single Entree</td>
<td>$4.10</td>
<td>100</td>
<td>$410.00</td>
<td>$4.12</td>
<td>12</td>
<td>$49.48</td>
<td>$3.92</td>
<td>12</td>
<td>$47.08</td>
</tr>
<tr>
<td>9x9 Single</td>
<td>$4.10</td>
<td>25</td>
<td>$102.50</td>
<td>$4.98</td>
<td>12</td>
<td>$59.73</td>
<td>$4.98</td>
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<td>$59.73</td>
</tr>
<tr>
<td>9x9 3-Compartment</td>
<td>$4.10</td>
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<td>$102.50</td>
<td>$4.98</td>
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<td>$59.73</td>
<td>$4.98</td>
<td>12</td>
<td>$59.73</td>
</tr>
<tr>
<td>10x8 2-Compartment</td>
<td>$3.92</td>
<td>12</td>
<td>$47.08</td>
<td>$3.34</td>
<td>24</td>
<td>$80.24</td>
<td>$2.65</td>
<td>8000</td>
<td>$21,200.00</td>
</tr>
<tr>
<td>16oz. Hot/Cold Cup</td>
<td>$0.02</td>
<td>1000</td>
<td>$21.00</td>
<td>$0.02</td>
<td>24</td>
<td>$80.24</td>
<td>$0.02</td>
<td>8000</td>
<td>$21,200.00</td>
</tr>
</tbody>
</table>

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\* Or similar dimensions

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**Figure 2:** Reusable packaging comparison provided by Smith College Dining Services.
2.2 OPTIMIZING FOR DISPOSABLES

This section shares resources for selecting the least impactful single-use disposable products, by determining local disposal options (2.2.1), conducting waste audits (2.2.2), and balancing product performance needs with sustainability (2.2.3). Additional considerations are presented in 2.2.4. Finally, in 2.2.5, it presents four databases for identifying products (both compostable and recyclable) that are PFAS-free and information about hazardous chemicals in plastics.

USING THESE RESOURCES

2.2.1 DETERMINE DISPOSAL OPTIONS (2.B)

We learned that compostables may not be the best option for some institutions depending on the capabilities of nearby composting facilities. As demonstrated by Brandeis University and UMass Amherst, it is important to check with local compost facilities to determine that specific foodware products can be processed.

COMPOSTABLES

If you do not have access to a commercial composting facility or the local facility is not able to process compostable foodware, recyclables may make sense as a single-use alternative. Compostable foodware is typically more expensive than recyclable foodware and can generate methane, a greenhouse gas, when sent to a landfill instead of a composting facility.\[32\]

\[32\] Sustainable Purchasing, 2020, p. 7
RECYCLABLES

Recycling facilities may not accept recyclable plastic foodware because of food contamination concerns and most foodware “is unlikely to be recycled as there are limited markets for these products once they have been used.”

Foodware is challenging to recycle:
1) food from improperly cleaned containers can result in contamination
2) similar looking compostable foodware can contaminate recycling
3) recycling is based on market demand and materials may not be profitable to recycle.

It is equally important to communicate with recycling facilities about what level of contamination is acceptable and what products will be processed, as opposed to forwarded to landfills.

2.2.2 WASTE AUDITS

Waste audits or assessments can be used to evaluate the effectiveness of current waste management systems and to progress towards waste reduction goals.

The EPA specifies that an audit can include assessments of:

- Waste generated on site
- Purchasing and waste management practices
- Waste reduction efforts
- Areas for additional waste reduction efforts

Waste audits will look different depending on the needs of the institution. The EPA Best Practices for WasteWise Participants provides tips and guidelines for three types of waste audits: records examination, facility walk-throughs, and waste sorts.

2.2.3 BALANCING PERFORMANCE WITH SUSTAINABILITY

Not all menu items will require heavier duty foodware; where possible, picking appropriate containers for specific menu items can help to reduce use of unnecessary resources. Smith College identified food packaging items that should be used with common meal items to ensure both that non-compostable packaging was only used where necessary but also that products were used intentionally and as intended across all campus dining halls.

For guidance, the Sustainable Purchasing Leadership Council (SPLC) Action Team on Food Service Ware worked with the Center for Environmental Health (CEH) to generate a table of example compostable and recyclable foodware materials and their general performance characteristics (e.g., hot/cold, dry/wet, greasy).

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33 Ibid, p. 13
34 Ibid.
36 Sustainable Purchasing, 2020, p. 15
2.2.4 OTHER SUSTAINABILITY CONSIDERATIONS

- Products that are easily distinguishable as compostable or recyclable are more likely to be properly sorted.\(^{37}\)
- Molded fiber products generally have high levels of fluorine due to fluorinated additives.\(^{38}\)
- Products made of waste plant material are preferable to new plant material.\(^{39}\)
- Higher recycled content means lower environmental footprint, but be wary of black plastic. The source of recycled content in black plastic may include toxic ingredients.\(^{40}\)
- Black plastic is additionally not desirable to recycling facilities.

2.2.5 ENSURE HUMAN HEALTH AND SAFETY

“Single-use food containers are often treated with chemicals known as PFAS (per and polyfluoroalkyl substances) to make them water and grease resistant, but these chemicals are harmful to our health and should be avoided.”\(^{41}\)

AVOID PFAS

If you are specifically looking for compostable PFAS-free serviceware, it is best to procure BPI-certified or CMA Composter-Approved products. There are a handful of useful databases for determining if foodware products contain PFAS or not. Additional details on these databases are provided in Figures 1 and 2 (below) and Appendix A.

It is still important to communicate with your local compost facility to determine what compostability certifications or other requirements must be met before making foodware purchases (2.B Communicate with Waste Facilities).

AVOID HAZARDOUS CHEMICALS

Plastic products can contain additional chemicals. The Plastics Scorecard rates specific types of polymers which may be used in foodware products based on the number and percent by weight of chemicals of high concern (CoHC) found in the final product.\(^{42}\) Five of 10 tested polymers, such as polystyrene, use a CoHC as a primary input in each manufacturing state.\(^{43}\)

To see additional details on various plastic polymers, refer to the Appendix 3 in Plastics Scorecard: Evaluating the Chemical Footprint of Plastics, entitled Polymers and Hazard Rankings of their Primary Chemicals, Intermediate Chemicals, and Monomers.\(^{44}\)

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\(^{37}\) Chiang et al., 2018, p. 24  
\(^{38}\) Ibid, p. 31  
\(^{39}\) Sustainable Purchasing, 2020, p. 18  
\(^{40}\) Ibid, p. 20  
\(^{41}\) CEH, 2020  
\(^{42}\) Rossi & Blake, 2014, p. 4  
\(^{43}\) Ibid.  
\(^{44}\) Ibid, p. 54
Databases for PFAS-Free Compostable and Recyclable Foodware

Figure 1: Guide for identifying the most useful database for your single-use foodware needs, including single-use compostable or recyclable foodware products that are PFAS-free.

In summary, the “most benign” plastic type is Polylactic Acid (PLA), followed by Polypropylene (PP) and Polyethylene (PE).\textsuperscript{45} Even so, PLA is not a green polymer, scoring 58 out of 100, with 100 being a polymer based on low hazard chemicals.

Reusable clamshell containers, such as OZZI, are typically made out of #5 plastic, polypropylene, making it one of the least concerning plastics available on the market for foodware.

\textsuperscript{45} Ibid, p. 4
**Figure 2:** Summary of useful databases for finding single-use compostable or recyclable foodware products that are PFAS-free.

**BPI Certified Compostable Products:** BPI is a non-profit association with the largest certification program for compostable products in North America. It verifies that products have been independently tested and verified as commercially compostable. The BPI product database includes a definitive list of compliant products. As of January 2020, this includes the requirement that products do not contain added fluorinated chemicals (PFAS) and that tests report less than 100ppm total fluorine [see Appendix A].

**CMA Database:** CMA certified products must be PFAS-free as of January 1, 2021, meaning that the products contain less than 100ppm total fluorine and/or do not intentionally add fluorine. Their database lets you find certified compostable products, which technologies they are compostable in, and where partner facilities are located [see Appendix A].

**CEH Single-Use Foodware Public Database:** Includes additional products that haven’t been BPI certified or CMA Composter-Approved. This database can fill in the gaps to see if current food serviceware contains PFAS, help you avoid PFAS options, and identify non-certified alternatives that are likely PFAS-free [see Appendix A].

**Food Packaging Forum Brand and Retailer Initiatives:** Compiles information about different food brands and retailers that have launched voluntary initiatives and commitments to improve chemical safety and resource efficiency of food contact materials (FCMs) and articles (FCAs) they use [see Appendix A].
2.3 NEGOTIATING SUSTAINABLE CONTRACTS

This section provides resources for operated dining services seeking ways to incorporate sustainability metrics into future dining contracts or self-operated dining services interested in measuring their sustainability efforts.

2.3.1 INCORPORATE WASTE REDUCTION METRICS INTO REQUESTS FOR PROPOSAL

In *Focus 3: Food Service Contracts with Waste Reduction Metrics*, Brandeis University is highlighted for their introduction in 2020 of waste reduction metrics (in addition to food-related metrics) into their request for proposal (RFP). They additionally opted for a “fee structure type contract” which in providing access to data on exactly what is ordered and how much money is spent, has allowed them to better understand the impact of COVID-19 on packaging waste.46

Brandeis University found resources from **FINE, Roots of Change**, and **Food Solutions New England** useful in designing metrics for the new contract. They also reviewed existing programs and frameworks and picked from each of them what was best for their situation. These include **Real Food Challenge, Harvard Sustainable and Healthful Food Standards, Menus of Change, Cool Food, and 50by60**.

SAMPLE RFPs

The following examples and resources for incorporating sustainability into RFPs may be useful.

**Compostable and PFAS-Free**

While not from a college or university, the State of Connecticut Department of Administrative Services issued a [RFP](#) in 2019 for proposals for Food Service Supplies for agencies and other state organizations. This RFP specified requirements for any Food Service Ware (FSW) products provided by the contractor: **“Bidders may only offer products with a compostability claim that is verified.”**

This was followed by a list of acceptable certification methods. These could include **BPI Certification, Cedar Grove Approved, Compost Manufacturing Alliance** or via independent lab testing.

**Discouraged Food Packaging Items**

Member Institutions of the Colleges of the Fenway (COF) consortium [RFP](#) from February 4, 2021 includes **Sustainability Goals and Requirements for Dining Services**. This addresses various

46 Gould, 2020

47 Belisle, 2019, pp.8-9
sustainability goals, including waste reduction. Categories included that may have relevance to other dining services include:

- Recycling and composting
- Waste reduction and diversion
- Reduced use of bottled water
- Reusable containers
- Monitoring through metrics

Regarding reusable containers, proposers are asked to recommend how they will continue to implement and manage reusable containers used for serving food in dining centers.

The RFP also lists items they do not wish to be used or sold in dining services:

“COF discourages the Operator from using or selling in its foodservice operations on COF’s campuses the following products:

- Plastic drink straws
- Bottled water
- Non-recyclable or non-compostable single-use service wares”

Just as with Brandeis University, they also introduce a stipulation for monitoring the progress of sustainability elements.

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Additional Examples

- **Sample Language & Resources for Local Foods in Contracts & RFPs**: features tips for making objectives clear in food service management RFPs. It also includes examples of contracts that effectively build in accountability and reporting to their sustainability requirements.50

- **Framingham State University RFP**: includes five key areas of sustainability, including disposal. This includes minimization of waste, composting, ecologically sensitive packaging, and efficient waste disposal mechanisms. Another key area is innovation and education to ensure that employees are educated about sustainability innovations and reasons for operational decisions.51

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48 COF, 2021, pp. 29-30  
49 Ibid, p. 30  
50 FINE, n.d.  
51 Framingham, 2017, p. 8
Appendix A: SINGLE-USE FOODWARE DATABASES

### Databases

<table>
<thead>
<tr>
<th>Database</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.1 Biodegradable Products Institute: Certified Compostable Products</td>
<td>40</td>
</tr>
<tr>
<td>A.2 Compost Manufacturing Alliance: Certified Compostable Products</td>
<td>42</td>
</tr>
<tr>
<td>A.3 Center for Environmental Health: Single-Use Foodware Products Tested</td>
<td>43</td>
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<td>for Fluorinated Additives</td>
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</tr>
<tr>
<td>A.4 Food Packaging Forum: Brand and Retailer Initiatives</td>
<td>44</td>
</tr>
</tbody>
</table>

**A.1 Biodegradable Products Institute: Certified Compostable Products**

BPI is a non-profit association with the largest certification program for compostable products in North America. It verifies that products have been independently tested and verified as commercially compostable. The BPI product database includes a definitive list of compliant products. As of January 2020, this includes the requirement that products do not contain added fluorinated chemicals (PFAS) and that tests report less than 100ppm total fluorine. This database is useful to institutions for determining foodware is compostable and PFAS-free.

**HOW DO I SEARCH THE DATABASE?**

There are two fields that can be used to search the database. Field one is a text field for entering a company name, product name, SKU, or keywords. Only one field needs to be specified to search the database. The second field is a drop down containing detailed, selectable subcategories of packaging within these categories: Agriculture, Bags, Packaging,
Foodservice, Resins, Components, and Molded Fiber. For example, under Foodservice you can select bowls, cups, cutlery etc. Before searching, choose to display results by product or company.

Photo 2: Result page for “hot cups” from BPI database displayed by company.

WHAT DOES THE DATABASE PROVIDE?

If searching by company, a list of companies will appear, including the company name, address, a link to their list of certified products, and their logo and website (Photo 2).

If searching by product, each product will appear in a table, alphabetized by company name, with the following information (Photo 3):

a) Company
b) Brand
c) SKU
d) Name
e) Category
f) Subcategory
g) Color & Printed/Unprinted
h) Maximum Thickness/Usage

Photo 3: Result page for “hot cups” from BPI database shown by product.
A.2 Compost Manufacturing Alliance: Certified Compostable Products
https://compostmanufacturingalliance.com/cma-commercially-accepted-products/

The Compost Manufacturing Alliance database lets you find certified compostable products, which technologies they are compostable in, and where partner facilities are located. Certified products must be PFAS-free as of January 1, 2021, meaning that the products contain less than 100ppm total fluorine or do not intentionally add fluorine.

HOW DO I SEARCH THE DATABASE?

Before searching the database, you can select a manufacturer, a composting technology, enter a text query or any combination of the three (Photo 4). After searching you can further refine your search terms or sort the results by relevance, name, or recency.

WHAT DOES THE DATABASE PROVIDE?

A list of product types for specific manufacturers will be displayed. Each result can be clicked on for additional information. This includes a brief product description, the manufacturer name and website, the different sizes and SKUs of products that fall under that category, composting technologies required for the products, and an image of the product.

Photo 4: CMA database search interface.
A.3 Center for Environmental Health: Single-Use Foodware Products Tested for Fluorinated Additives

https://docs.google.com/spreadsheets/d/1sNwuTxMwNMKfLoobp33QblxQzki95nJwv_MNSEcr6HM/edit#gid=98842983

This database is meant to help purchasers determine non-fluorinated foodware products and avoid products with PFAS. It contains single-use foodware products (e.g., bagasse plates, paper bowls, PLA utensils) that CEH has tested via third-party laboratories for fluorinated compounds. They test for fluorine as a common indicator of other PFAS. Single-use food is often treated with chemicals known as PFAS (per and polyfluoroalkyl substance) which can be harmful to our health.

**HOW DO I SEARCH THE DATABASE?**

You can search the entire database or focus on sheets that contain No & Low F products or certain product types. Product type sheets are broken down into Bowls, Take-Out, Plates, Trays & Boats, and miscellaneous. The miscellaneous category includes about 40 entries for cups, lids, and straws. Products marked as “Low/No F” have been tested and contain no/low-levels of fluorine (less than 100ppm).

Use the tabs at the bottom of the excel sheet to navigate between categories. To search for a specific product by name, SKU, or product number you must use the “find” feature by pressing ctrl + F (PC) or cmd + F (Mac) on your keyboard.

**WHAT DOES THE DATABASE PROVIDE?**

For each tested product, entries include:

- Peaslee Lab results
- Galbraith lab results
- Date added to database
- Manufacturer/Brand
- Type of product
- Product # / SKU
- Product description
- Product material type
- Size
- BPI certified status
- CMA certified state
- BioPreferred Mandatory Federal Purchasing
- Price date
- Price/unit
- Price URL
- Manufacturer URL
- Notes & product information
- ID#

The database includes products that haven’t been BPI certified or CMA Composter-Approved. This database can fill in the gaps to see if current food serviceware contains PFAS, help you avoid PFAS options, and identify non-certified alternatives that are likely PFAS-free.
A.4 Food Packaging Forum: Brand and Retailer Initiatives
https://www.foodpackagingforum.org/brand-retailer-initiatives

This database compiles information about different food brands and retailers that have launched voluntary initiatives and commitments to improve chemical safety and resource efficiency of food contact materials (FCMs) and articles (FCAs) they use. This database excludes manufacturers of food packaging articles and only applies to single-serving and other types of food packaging companies. This database may be useful to institutions who regularly purchase single-serving products and who want to identify brands who have goals to improve chemical safety in their products.

HOW DO I SEARCH THE DATABASE?
Search and filter tools in the columns can be used to find and order information about specific companies, keywords, or geographic areas. The search bar above the table can be used to filter all columns in the database. The search tools are sensitive and may show only exact matches. The database contains over 350 entries. You can control how many rows are displayed per page.

WHAT DOES THE DATABASE PROVIDE?
Initiatives and commitments that are included:
1. Have been made by food brands, food retailers, or their representative associations
2. Aim to improve the safety of the chemicals present in FCMs or FCAs used OR resource efficiency
3. Have been actively communicated to the public and are described in publically accessible websites or documents

The database provides an entry row for each initiative or commitment and includes key information about:

a) The simplified name of the responsible company or organization
b) The year it was launched
c) The country or region where it is applicable
d) Related keywords
e) The type of company or organization
f) Whether it is related to chemical safety
g) Whether it is a commitment or initiative
h) A link to additional information
i) A short summary description
Photo 5: The Food Packaging Forums’ Brand and Retailer Initiative database for identifying brands with goals to improve chemical safety in their products.
Appendix B: SURVEY QUESTIONS

1. Which of the following packaging-related programs have ever been in place at your institution prior to or during COVID-19 lockdowns? Which are likely to continue or be implemented after COVID-19 restrictions are lifted?
   a. Elimination of plastic straws Reusable mug discount program
   b. Online meal ordering (i.e., Grubhub)
   c. Recyclable packaging
   d. Compostable packaging
   e. On-campus compost collection Encouraging use of personal
   f. Reusable utensils
   g. Reusable container program
   h. Bulk purchasing
   i. Zero waste campaign, other campaigns

2. In making decisions about packaging, what has been prioritized prior to and during COVID-19? Rank from highest (1) to lowest priority (7-8):
   a. Cost ($)
   b. Food safety regulations
   c. Human health impacts of packaging materials (e.g., PFAS, BPA)
   d. Environmental impacts
   e. Labor requirements (e.g., cleaning, prep time)
   f. Product availability
   g. Container durability (e.g., microwavable, dishwasher safe)

3. During COVID-19, to what extent have the following challenges related to food packaging been a concern?
   a. High cost ($)
   b. Waste management (e.g., lacking infrastructure for increase in packaging waste)
   c. Reducing environmental impact
   d. Labor requirements
   e. Product availability
   f. Resistance to reusables (e.g., safety, added complexity)
4. Please estimate whether the amount of money ($) spent on the following types of food packaging has decreased, stayed the same, or increased from 2019 (prior to COVID-19) to 2021 (during COVID-19):
   a. Compostable
   b. Recyclable
   c. Non-recyclable
   d. Reusable
   e. All types

5. For each time period [Fall 2019, Spring 2020, Fall 2020, Spring 2021], roughly what percent of meals (%) were served to students by the following methods?
   a. Grab-and-go / Pre-plated
   b. Self-service buffet
   c. Employee served
   d. No-contact delivery
   e. Other

6. For the following semesters [Fall 2019, Spring 2020, Fall 2020, Spring 2021], please estimate:
   a. Avg # Meals served daily
   b. Food cost/plate ($)
   c. # students on meal plan
   d. # dining halls in operation

7. Prior to COVID-19, what food packaging products were in use? (Brands, product numbers, etc.) If available in a document, please consider attaching at the end of this survey.

8. During COVID-19, have the packaging products in use changed? If so, how? If available in a document, please consider attaching at the end of this survey.

9. Prior to COVID-19, who were your primary vendors for packaging products? How, if at all, did your vendors change during COVID-19?
This sample Request for Proposal (RFP) was issued by the State of Connecticut Department of Administrative Services in 2019 for proposals for Food Service Supplies for All Using State Agencies, Political Subdivisions and Not-For-Profit Organizations of the State. The RFP specifies requirements for any Food Service Ware (FSW) products provided by the contractor. This includes that products are free of PFAS, polystyrene, and polyvinyl chloride (PVC) and that they are certified as compostable. These are important examples for institutions who want to increase sustainability and focus on human health. It should be kept in mind that compostables are a good alternative to other disposables only when access to a commercial compostable facility is possible.

Center for Environmental Health (CEH) (2020, March). Healthier Food Serviceware Choices

This includes easy to digest steps for getting rid of PFAS, while also advocating for the adoption of reusables. It communicates why PFAS are concerning and in what food packaging products they are commonly found. There is a flowchart to guide people through checking products in the CEH Foodware database. If products contain PFAS, it suggests avoiding purchasing them in the future. The flowchart prompts users to consider the viability of reusable foodware. If not, it directs users to the database to check their single-use products (both compostable and recyclable) for PFAS and communicates the importance of disposing of different products properly. Fluorinated Additives Fact Sheet - Center for Environmental Health is a related facesheet that provides greater detail on what is known about the dangers of fluorinated additives.


This resource can provide background on why PFAS are concerning (Section 1), guidance on avoiding PFAs (Section 2), and benefits and considerations for a range of food serviceware products by material type (Section 3). Note that this report was released before BPI and CMA certifications became PFAS-free.

Section 1 describes different fluorinated compounds (PFAS) in disposable foodware, the impact on human health, and study findings on products containing these chemicals. Pages 15-16 include specific CEH Recommendations for PFAS-free foodware. For example, all molded fiber products tested consistently as fluorinated. On the other hand,
bamboo, clay-coated paper, clear PLA, palm leaf, and uncoated paper were consistently non-fluorinated. Section 2 provides guidance for purchasers to avoid PFAS, such as by sending products to test for the CEH database, contacting suppliers, adopting existing specifications, and purchasing non-fluorinated products. Section 3 includes a section on the benefits and considerations of reusables (p. 21-22) along with compostables, recyclables, and other products. It includes disposable foodware products to avoid and why (i.e., molded fiber products, polystyrene).


This RFP example includes sustainability goals and requirements for dining services related to food packaging. These are recycling and composting diversion, waste reduction, reduction of plastic straws, bottled water, and landfill single-use service wares, and reusable containers. This provides a good example for the types of behaviors that food contractors can be made responsible for, but it doesn’t specify measurable metrics, which are important so that progress regarding sustainability goals can be achieved.


This resource provides sample language and tips for making objectives clear in food service management RFPs. It also includes examples of contracts that effectively build in accountability and reporting to their sustainability requirements. These examples can be useful when determining how to effectively incorporate food related sustainability metrics into dining services RFPs and contracts.


This article contains ideas for reducing food waste and packaging on college campuses. In summary: eliminate straws, invest in reusable & recyclable containers, buy in bulk, and invest in storage containers. This resource is useful to generate ideas on improving sustainable practices in elimination of waste. It specifically emphasizes that oil-based packaging results in thousands of pounds of plastic waste.

Another sample RFP from Framingham State University includes five key areas of sustainability, including waste disposal. This includes minimization of waste, composting, ecologically sensitive packaging, and efficient waste disposal mechanisms. Another key area is innovation and education to ensure that employees are educated about sustainability innovations and reasons for operational decisions.


A webinar hosted by Brandeis University Dining Services regarding new sustainability initiatives that they incorporated into their 2020-2022 food service contract with Sodexo. They incorporated eight measurable sustainability metrics, four related to waste reduction. These four metrics include measures for addressing waste disposal, recyclable rejections, waste diversion, and disposables. They keep Sodexo accountable and assess their progress by regularly monitoring and expanding on data provided by Sodexo.


Marketing materials specific to G.E.T. provide an overview of products offered, examples of best ways to implement Eco-Takeouts (i.e., closed loop system, honor system or system for ensuring guest accountability for returning containers), and examples of potential cost savings.


This resource emphasizes the importance of reusable containers in combating the plastic pollution crisis and moving away from a disposable, fossil fuel-based economy. They address that despite concerns about the safety of reusables during COVID-19, recent guidance makes clear that reusable containers can be used by employing basic sanitization and COVID-19 hygiene procedures. Best practices for reusables during COVID-19 are additionally presented.


This recent research project addresses the implementation of a reusable to-go container pilot program at UMass Amherst’s Berkshire Dining Commons. Although it was
disrupted by COVID-19, the proposed pilot program would start with 1,000 reusable to-go containers. The report provides some background information on the amount of money UMass Amherst spent on single-use containers at Berkshire Dining Commons prior to COVID-19. The cost of implementing the reusable container program is compared, including the implementation cost, water costs, and costs for broken or missing containers. The paper discusses the advantages and disadvantages of various options for implementing a reusable container program, including the best way for collecting containers and ensuring student participation (i.e., return containers, don’t take too many containers). It discusses the potential of OZZI machines for collection. They take into consideration money spent and saved, waste reduced, and container longevity to argue in favor of a reusable container program.


At Yale, when recyclable containers must be washed, they are more likely to be thrown out or not cleaned. This results in contaminated bins. It is important to note that the recyclable packaging can contribute to contamination and waste by being incorrectly recycled (not washed), and that not many students follow those instructions.


This article discusses the cost of using Eco-Takeouts for a reusable to-go program. Students could pay to participate in order to lessen the impact of the initial investment. Some major factors that can influence the size of a reusable container program are: quantity of take-out meals served on campus daily and average percent of reusables lost or damaged by students annually. The annual replacement rate of reusables is estimated to be 10-20% from normal wear and tear, an additional 10% may be lost or damaged by students. This resource emphasizes the importance of promoting the program and presents some marketing ideas. This article would be useful for colleges who want to shift to reusable to-go operations, but are receiving push back. It includes a budget breakdown and stats about the product.


This article highlights the increased use of single-use packaging and individually packaged food and water bottles at Middlebury College in Fall 2020. The article highlights obstacles brought about by COVID-19 in terms of packaging waste. It demonstrates the ways in which sustainability has taken a backseat to health and safety
concerns due to COVID-19 guidelines. Concerns represented in this article include: increased foodware costs, waste management (too many containers to compost, staff and supply shortages for managing bins), and product availability.


This guide provides reusable foodware substitutes for common disposable products. It also includes a cost calculator for help in assessing potential cost savings by using reusables. It provides details on how reusables can reduce costs and environmental impacts. It stresses the importance of assessing costs versus benefits, providing two worksheets for analyzing potential cost savings and a suggestion for calculating the number of uses required before cost savings start to accrue (investment is recovered). There is also an online calculator: http://www.rethinkdisposable.org/foodware-calculator. These analysis include tracking total purchases and projected annual cost of disposables, calculating annual savings of reusables, adding or subtracting annual cost changes such as labor, capital investments, waste hauling, and water and energy usage, and determining the payback period.


Haverford College students developed a program for returning reusable containers designed to be used with the fast food industry and on college campuses. Similar to Smith’s containers, but also with an eye into use by restaurants, with rewards programs for returning containers. After conducting interviews it was found that reusable container models may be beneficial for institutions to compare and learn from.


Using properly cleaned, sanitized, and handled reusable foodware instead of disposables can save money, prevent harm to the environment, and doesn’t contribute to increased cases of COVID-19 compared to disposable items. While not specific to colleges and universities, this covers considerations for the safety of reusables given current FDA guidance and shares sustainability best practices for restaurants reopening during COVID-19.

The Plastics Scorecard aims to inform the selection of safer plastics by food service providers as well as to incentivize manufacturers to reduce the number of chemicals of high concern (CoHC) in foodware products. They present a chemical footprint of plastic polymers that scores polymers based on the number and percent by weight of CoHC they contain. If using plastic products, such as recyclables or reusables, this report be used to make arguments for products that contain the least harmful available polymers.


This literature review and inventory is focused on the environmental impacts of foodservice products, including cups, bowls, plates, cutlery, and clamshells. Specifically, it is focused on greenhouse gas emissions of various foodware products, from extraction, manufacturing, distribution, consumption, and post-life management. Thus far, they determine that hot and cold cups have received the most attention, and few life cycle assessments have compared compostables, non-compostables, and reusable products. Existing studies have thus far varied in scope, detail, relevance, and quality, but generally reusable clamshells, plates, bowls and utensils all require low reusage levels for greenhouse emission reductions.


A year following the introduction of OZZI reusable to-go containers at Smith, this student study assessed the success of the new program. They reported areas for improvement to the program related to the token system and program outreach. An electronic token system is suggested as well as a more explicit end-of-the year returning procedure. The program was effective at reducing paper product waste and costs, even in the first year after implementation.


The SPLC Action Team identifies “issues around single-use food service ware and proposes strategies for addressing those issues to reduce environmental and human health risks.” Page seven covers common considerations for institutions (large populations, quick turnover, lack of dishwashers, reducing disposables, understanding disposal options, safety and performance needs). Pages 8-10 cover a range of strategies and suggestions for choosing reusables and what materials to avoid. Page 12 includes average compostable foodware pricing. Pages 13-16 includes a framework for considering the performance needs of products. Pages 17-20 include a comprehensive decision tree for avoiding chemicals and meeting other sustainability criteria (life cycle approach). The legend fully explains the decision points.
Large corporations like Sodexo, Aramark, and Compass Group laid off 90% of campus workers during COVID-19. The institutions working with these companies need to hold the companies accountable, as they do not currently take responsibility for food service worker wages and benefits. In the context of COVID-19, this resource emphasizes that it is important that these companies provide personal protective equipment and hazard pay to workers, refund student meal plans and respond to students, and honor contracts with independent farms. These are important considerations for dining services looking to sign contracts with food service corporations.

https://www.epa.gov/smm/best-practices-wastewise-participants#01

The EPA provides resources for conducting different types of waste audits (records examination, facility walkthrough, waste sorting) and the advantages and disadvantages of each approach. This resource highlights the benefits of conducting waste audits, including their ability to help assess the effectiveness of waste reduction efforts and for assessing waste management, diversion, and purchasing practices. This resource also includes additional tips for reaching waste reduction goals.
REFERENCES


Sustainable Smith. Call for student dining workers so reusables can be used. Instagram. (2021, March). https://www.instagram.com/p/CMCzVlmBRf3/.