

2022 CHAPMAN SUSTAINABILITY ASSESSMENT

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FOOD WASTE IN RANDALL DINING COMMONS

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INTRODUCTION

This section examines the current food waste prevention programs in place at Randall Dining Commons, which is managed by Sodexo Restaurant Services (Sodexo). Randall Dining Commons is located in the Sandhu Resident Center and acts as the main dining cafeteria on campus. All students who live in the residence halls — non-apartment style housing — are required to participate in the university meal plan program (4). Commuters, staff, and faculty members are offered meal plans; however, residence hall students make up the majority of consumers (4).

The class of 2025 currently occupies the undergraduate dorm housing with a current student population size of about 1,700 students (5). It is predicted that the average university and college student produces 142 pounds of food waste per year meaning that a cumulative food waste of about 241,400 pounds is expected this academic year from the class of 2025 (16). This can be equated to the weight of three cargo trucks weighing 80,000 pounds each (11). However, it is important to note that this number may increase or decrease as it

does not account for commuter first-year students and non-residence hall students as well as faculty and staff. This highlights the importance of the current food waste prevention programs in the Randall Dining Commons, which include:

- Enviropure Waste System
- A La Minute Food Preparation
- LeanPath Kitchen Waste Tracking
- Drive Program
- Trayless Dining
- Just Ask Initiative
- Weigh the Waste Program

All programs listed will be evaluated to better understand the operational procedures and to offer developments and innovations that will improve relationships between Sodexo, students, and other university actors as well as reduce pre- and post-consumer waste.

BACKGROUND AND IMPORTANCE

Chapman University currently has 10,001 students enrolled: 7,656 undergraduate and 2,345 graduate, and a faculty size of 1,117 members (6). All groups have access to Randall Dining Commons along with other non-faculty staff employees (4).

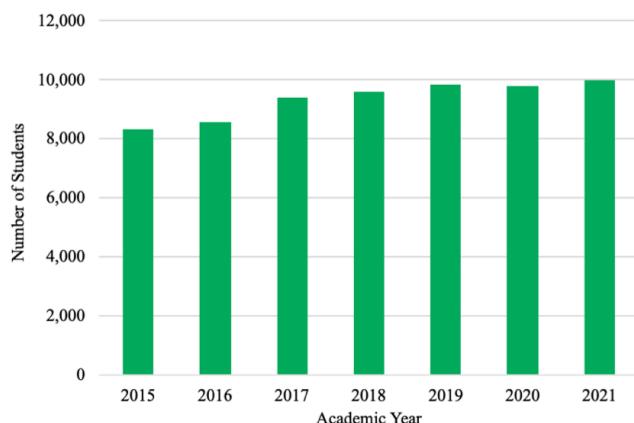


Figure 1. Chapman University's Number of Students per Academic Year (2015 to 2021).

Chapman currently plans to expand its student population size to 11,000; it is expected that food waste in Randall Dining Commons will increase in tandem (6). It is important to note that student body size has been increasing over the past few years excluding 2020 due to the COVID-19 pandemic (Figure 1).

The increase in the student body population is an indicator that monitoring and preventing food waste over time is going to be critical in order to save money and cut costs in Randall Dining Commons. Before examining the programs in place, a clear understanding of what food waste is must be made. Food waste can be defined as the loss of edible food that is not consumed; this loss can occur during preparation (pre-consumer) and consumption stages (post-consumer) (17). The wasted food products referred to are of good quality, and able to be consumed; however, are discarded due to a wide range of reasons including food preferences (17).

Food waste does not come without consequences — it has environmental, social, and economic repercussions. Discarding consumable food wastes water, energy, and labor as well as generates large amounts of greenhouse gasses (15). In fact, 11% of the world's greenhouse gas emissions come from food waste in landfills (15). This can be equated to the emissions of over 37 million cars (15). These emissions come from the billions of pounds of food per year that are thrown away, which — just in the United States — equals the loss of \$408 billion. This edible food waste also reduces the resources available in the food system for those with low access to food (15). The role of Chapman and Sodexo in reducing food waste in

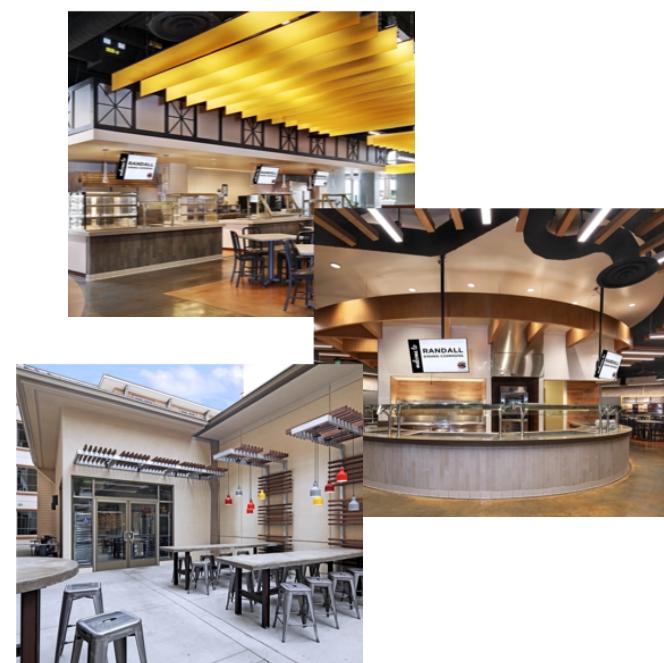


Figure 1. Randall Dining Commons' dining spaces and food stations (1).

Randall Dining Commons is key to creating a more sustainable campus and community — financially, socially, and environmentally.

RANDALL DINING COMMONS' SUSTAINABILITY PROGRAMS

Randall Dining Commons opened in 2009 and acts as the primary dining location for students housed on campus (4). It features made-to-order food stations including:

- Stone-fired pizza
- Open-fire mesquite grill
- Panini sandwiches
- Vegan entrées
- Sushi bar
- Pasta your way
- Fresh fruit and salad bar
- Chinese wok
- Homemade soups
- Baked desserts
- Deli choices served on freshly baked bread

Chapman and Sodexo work together to reduce the environmental impact of food service (2). The sustainability programs listed will be explored below with information provided by Chapman's Food Service website, Chapman's Sustainability Program Coordinator, and Sodexo's General Manager for Randall Dining Commons.

Enviropure Waste System

The Enviropure Waste System was installed in 2013 which replaced the previous food waste compactor (10). Past

Energy Conservation and Sustainability Manager with Chapman — Mackenzie Crigger — explained:

"Composting was going to add substantially to our waste management bill and result in the organic waste being trucked two hours into the desert, so the environmental impact was still going to be large from our food waste... EnviroPure saves us money and got most of our food waste out of our landfill stream long before the state was requiring us to take action." (10).

In this statement, Crigger is referring to California's Mandatory Commercial Organics Recycling program that expanded to include all organizations that produce four or more cubic yards of organic waste per week (10).

The new system works similarly to composting and uses natural biological decomposition processes to accelerate the breakdown of food waste (8). Through physical processing, food waste is ground continuously to release water, reduce particle size, and increase surface area in a controlled environment. In the reaction chamber of the waste system, carbon is transformed into O₂ through temperature and pH controls. A BioMix additive is required for this process as well. The wastewater is then emitted into the sewer system as greywater to be purified at a later time. Greywater can be used to water landscape plants and trees.

Enviropure food waste elimination systems are designed to integrate into most commercial kitchen and waste

disposal locations (8). They offer financial returns in terms of waste transportation and labor costs as well as decreased food waste in landfills. Chapman has seen success with the Enviropure Waste System, and the system can be considered positive progress for food waste management in Randall Dining Commons (10).

A La Minute Food Preparation

For a majority of stations, Sodexo chefs employ A La Minute food preparation which allows meals to be prepared quickly and served almost immediately (3). Meals following the A La Minute preparation are not prepared in advance. General Manager Hebblethwaite states that this method allows Sodexo employees to cross utilize items as needed and reduce food waste. The minimization of food waste through this method can be attributed to no more than 10 plates of food being prepared at a time. The food that was not used during preparation can be saved for future meals; for example, unused pasta from the pasta station can be used for

soup, pasta salad, or other pasta dishes (12). A La Minute food preparation can help decrease post-consumer food waste in addition to increasing consumer satisfaction with the meal.

LeanPath Kitchen Waste Tracking

LeanPath Kitchen Waste Tracking is a system that records all food waste in a kitchen station (13). In Chapman's operations the system includes a scale that is attached to a tablet which is used to log and categorize waste — see *Figure 2* for images of the system (12, 13). Sodexo chefs are trained to separate food waste from other categories of waste and log that food waste into the system. The information recorded includes the weight and type of food waste, and additionally, the name of the employee inputting the data (12). The system files the information for back-end data (12).

LeanPath claims to have an average of 50% food waste reduction per site along with a 2% to 8% reduction in food purchases (13). The LeanPath system in Randall Dining Commons is said to be of minimal cost which includes the initial purchasing charge along with an annual program and back-end data fee (12). Although Sodexo was unable to provide exact numbers, a 2016 audit of Chapman's Residence Life Dining Services provided monthly pricing for the LeanPath 360 system — see *Figure 3* for pricing table (9).

However, there are three main shortcomings with the LeanPath



Figure 2. LeanPath Kitchen Waste Tracking system (13).

system in Randall Dining Commons' kitchen: a lack of employee training, communication of effectiveness, and engagement with the program. The current employee training is minimal — it includes a reminder at the start of each semester to use the system and an introduction to the program for new hire employees (12). General Manager Hebblethwaite explained that the user-end of LeanPath is simplistic, and may not need further training (12). LeanPath, however, proposes that the introduction and full implementation of its system should increase employee engagement with the program and food waste

prevention (7). Additionally, there appears to be a lack of communication about the program's effectiveness with employees (12). The disconnect in terms of effectiveness measurements may suggest a lack of engagement between the LeanPath program in Randall Dining Commons and Sodexo staff—this contradicts LeanPath's goal of raising employee awareness (7).

Therefore, this may indicate that Chapman and Sodexo may not be maximizing the benefits of the LeanPath Kitchen Waste Tracking system in terms of employee training, engagement, and implementation.

LEANPATH 360 PRICING TABLE

Edition	SMALL BUSINESS	PROFESSIONAL	ULTIMATE
Pricing	\$399/month	\$599/month	\$749/month
Tracking Customization	Operator Names, Containers, Food Costs	Operator Names, Containers, Food Costs, Food Types, Disposal Method, Express Transactions	Operator Names, Containers, Food Costs, Food Types, Disposal Method, Express Transactions, Loss Reasons, Pre- vs. Post-consumer

Graph 3. 2016 pricing table for the purchase of one LeanPath Kitchen Waste Tracking System. It is important to note that the pricing listed is general; costs may be lower as Sodexo has a contract with LeanPath (9)(13).

Food Preparation and Ordering System (Drive program)

Sodexo calculates the quantity of food to serve through the program Drive which uses historical data for food amount recommendations (12). The Drive program is a multifaceted system that allows Sodexo to plan meals, access historical data, and pull recipes (12). Data is collected on-site daily with each food station providing information on the amount of food served (12). The data is then used when calculating portion size which varies per dish per station (12). Employees aim to serve on tapas-sized plates with an average of 8 to 10 ounces of total food weight on the plate — 3 to 4 ounces of protein, and 2 to 3 ounces of starch and vegetables (12). The tapas-sized plates allow consumers to try multiple dishes during their dining experience (12). However, the burger and pizza stations are considered outliers with larger portion sizing (12). Qualitative data for food orders and menu choices are additionally done through the Drive program.

Produce, meats, and seafood are ordered through vendors that deliver daily in order to prevent spoilage (12). Raw fish and shellfish are able to be refrigerated for 1 to 2 days before cooking or freezing, while uncooked meat can be stored in the fridge for 3 to 5 days (18). Frozen fish and shellfish can be stored in the freezer for 3 to 12 months, similarly, raw meat can be kept in the freezer for 6 to 12 months (18). Produce has a longer shelf life: 10 to 12 days in the refrigerator and up to one year in the freezer (18). For other dairy

and grocery products, the kitchen orders 3 to 4 times per week depending on the demand and usage data from the Drive program (12). If the products expire and are unable to be used, they will be disposed of — this may occur due to a miscalculation or change in consumption pattern. Donations of excess food to Mary's Kitchen, a homeless shelter, only happen a few times a year, typically during large gatherings or events (12).

However, it is important to highlight that there appears to be a lack of student input for meal preparation. Increasing student engagement and food preferences in meal preparation and ordering may decrease post-consumer waste.

Trayless Dining and Just Ask Initiative

Trayless Dining and the Just Ask Initiative both aim to decrease post-consumer waste in Randall Dining Commons (4). It was noted that all programs lack a measurement to better understand the effectiveness of these programs (12).

Sodexo implemented trayless dining during the opening of Randall Dining Commons (12). There appears to be a lack of measurements to obtain the effectiveness of this program, however, based on past research it has been found that trayless dining reduces post-consumer food waste as consumers are unable to add extra beverages or meal plates to trays (12). This contradicts Sodexo's tapas-sized plates that promote the trying of multiple dishes during one meal period (12).

The Just Ask Initiative allows consumers to customize food orders that are tailored to dietary needs and desires (4). This may include asking for vegetarian and vegan options. Consumers who utilize the Just Ask Initiative may not take the prepared food plate, but instead ask for specific foods, therefore reducing potential food waste as unwanted items are not added. Additionally, by potentially lowering portion sizes per student need, the Just Ask Initiative helps prevent post-consumer food waste. However, General Manager Hebblethwaite highlighted that this program is not as utilized and effective as it could be as it lacks student engagement (12).

Weigh the Waste Program

The Weigh the Waste Program takes place several times a year in Randall Dining Commons and is conducted by the Office of Sustainability and student volunteers (2). The program has reduced food waste by 75% (2). Uneaten food is collected off of consumers' plates before their departure from the building and is then arranged into four separate bins: edible, inedible (peels, pits), liquid, and miscellaneous wastes (napkins, stir sticks, tea bags) (2). Consumers place their plates with the Weigh the Waste Program team rather than directly placing them onto the dishwasher line (2). The trays of the wasted food are then displayed for the remainder of the day so that there is a visual representation of the food waste produced during a single meal period (*Figure 4*) (2). Data from the event is also stored and collected by the

Figure 4.
Food Waste
from 2022
Weigh the
Waste event



Office of Sustainability (*Figure 5*). The Office of Sustainability engages with the student body through its Instagram (@sustainchapman) and additionally, through posting flyers around the Chapman campus (14). A guessing game is also created using a Google Form; students are asked to guess the weight of the waste — the winner receives a small prize. A picture of the food waste is also posted on Instagram with a link to the Google Form along with a flyer in Randall Dining Commons containing a QR code for the guessing game (14).

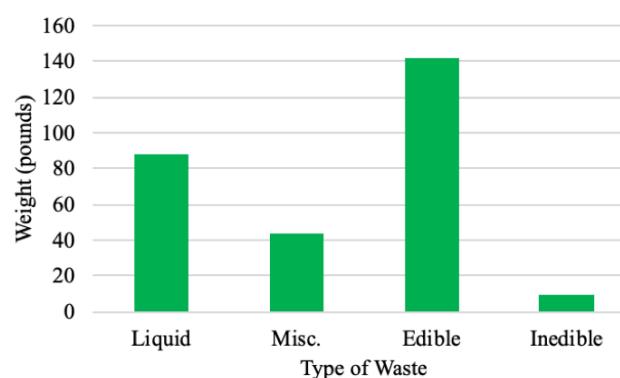


Figure 5. Graph of Weight the Waste data from an event held in March of 2016 (14)

RECOMMENDATIONS

Low Cost and Effort

- Grow the Office of Sustainability's campus presence during the week of Weigh the Waste through flyers and tabling in the Attallah Piazza, Argyros Forum, Randall Dining Commons, and other buildings on campus.
- Offer a university food voucher as a "thank you" for students who volunteer for the Weigh the Waste event.
- Increase social media outreach for the Office of Sustainability's Instagram account (@sustainchapman) to communicate the existence of programs such as the Just Ask Initiative.
- Publicize the Just Ask Initiative program during First Year Family Orientation, in Dean Jerry Price's weekly emails, and through promotional posters in Randall Dining Commons.
- Designate student leaders to provide students with simple tips to reduce waste during the Weigh the Waste event.
- Allow students and others greater access to the Weigh the Waste data through updating the tab on the Chapman University Dining Services website.
- Promote the Weigh the Waste event data and graphs in Dean Jerry Price's weekly emails.

Moderate Cost and Effort

- Update the Chapman Dining Services website — currently, most information is out-of-date and does not offer students, staff, and faculty full transparency with sustainability efforts occurring in Randall Dining Commons.
- Implement a tracking system in which Sodexo employees are trained to collect data on the number of students utilizing the Just Ask Initiative program (e.g. having a notebook or tablet to mark what a student asked for and entering data into the Drive program).
- Increase volunteer positions for the Weigh the Waste event and advertise open positions on the @sustainchapman Instagram page, Dean Jerry Price's weekly emails, and flyers throughout Randall Dining Commons.
- Develop Sodexo's relationship with the Chapman Food Recovery Network so there is greater contact with food donation organizations in the Orange County area.
- Offer a higher number of vegetarian and vegan options to reflect student preferences.
- Educate Sodexo employees in Randall Dining Commons on the sustainability practices in place: elaborate on the reasoning behind the programs, post signs on food waste in the kitchen, and offer

avenues in which employees can provide feedback on programs as well as give present new ideas.

- Allow Randall Dining Commons employees to have access to the LeanPath data to increase transparency with the system and provide markers of success in terms of food waste.
- Implement a student food preference form at the beginning of each semester to determine foods that students living in residence hall housing would like to see in order to decrease unwanted food served.

High Cost and Effort

- Hire a staff member to lead sustainability and food waste efforts in Randall Dining Commons.
- Appoint a paid team of student interns to conduct outreach and educate peers on simple changes they can make in regards to food sustainability.
- Confirm that there is a sufficient amount of LeanPath tracking system in each station and that Sodexo employees have been educated on the proper use and purpose of the system.

FUTURE AREAS OF RESEARCH AND KNOWLEDGE GAPS

There appears to be a disconnect between the sustainability programs in place and the purpose of these programs to students, staff, and faculty.

Future areas of research should include examining ways to increase student, staff, and faculty engagement with the sustainability programs in the Randall Dining Commons. Additionally, exploring new ways to conduct outreach to the student body beyond posters in the dining hall. This could include using a team of students to act as sustainability peer educators. Randall Dining Commons employee outreach should also be included in this area of future research. Engaging with the employees on the systems in place, such as the Enviropure Waste System, A La Minute Food Preparation, and LeanPath Kitchen Waste Tracking could increase food sustainability efforts. Another area of future research is food preparation and the Drive program. The Drive program should be examined along with the historical data it uses to determine the amount and type of food to order and serve.

It should be noted that there are certain gaps in knowledge in this audit as well. There was a lack of data and information in regards to the LeanPath Kitchen Waste Tracking system including costs, employee training, and the number of stations in Randall Dining Commons. Additionally, Sodexo was unable to provide measurements of the effectiveness of its sustainability programs. However, this provides another area of future research in terms of developing tools to measure the success of the sustainability programs listed in this assessment.

CHAPMAN SUSTAINABILITY ASSESSMENT

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