

University of British Columbia

Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Developing a  
Food Waste Recovery and Reduction Plan (FWRRP)  
within the AMS Nest

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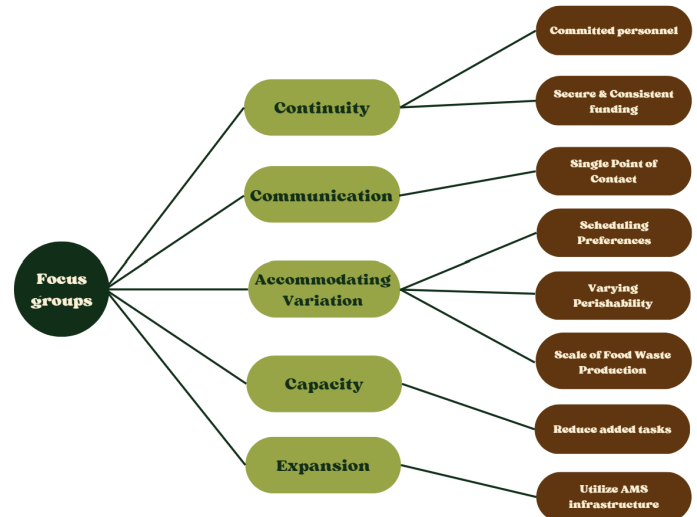
PRACTITIONER SUMMARY - KEY TAKEAWAYS

**Background**

The University of British Columbia Vancouver Campus is the site of both food insecurity and food waste. Food recovery programs show potential to address food insecurity and mitigate food waste at the same time. Aimed at the AMS Nest food system within the UBC Vancouver campus, this study assessed AMS Nest stakeholders’ barriers and opportunities towards food recovery. From primary and secondary research, the researchers formulated the Food Waste Recovery and Reduction Plan (FWRRP), a set of strategic guidelines towards the implementation of a future food recovery plan within the AMS Nest during the 2023-2024 school year. This report’s results, strategies, and implications are applicable to anyone interested in understanding the unique challenges and opportunities that present in university campus food systems.

**Key Takeaways**

Value	Explanation
Continuity	Ensure the ongoing presence of committed paid personnel, along with consistent funding & resources for the program.
Accommodating Variation	Key types of variation include (1) Scheduling Preferences, (2) Varying Food Perishability, and (3) Scale of Food Waste Production, each impacting pickup logistics. These may range from regularly scheduled pickups (typically for larger outlets) to case-by-case communication (typically for smaller outlets).
Communication	Have a single food safety-trained food recovery personnel as a point of contact and pickup, building strong relationships and communication networks.
Capacity	Minimize diverted time, resources, and staffing for food outlet staff.
Expansion	In parallel to food recovery, explore opportunities for more effective use of existing equipment, space, and facilities. Advocate for expansion of space, funding, and resources.



**Figure 1:** Focus group key takeaways. Stakeholder values are labeled in green, with proposed actions in brown.

**Table 1:** Important considerations regarding process

## EXECUTIVE SUMMARY

Globally, approximately 31% of food meant for human consumption is lost or wasted (Food and Agriculture Organization of the United Nations [FAO], 2014). This number is even higher in Canada - with an estimated 58% of food lost or wasted (Nikkel et al., 2019). The implications of food waste include economic loss and negative environmental impacts. In Canada, food waste is responsible for 56.6 million metric tonnes of CO<sub>2</sub> emissions annually (Nikkel et al., 2019), and the UBC food system contributes 29,000 tonnes of CO<sub>2</sub> emissions annually (UBC Campus & Community Planning, 2021). This project plays a role in achieving the campus-wide goal of reducing greenhouse gas emissions by 50%, and specifically, the target of reducing food systems emissions by 50%, as outlined in UBC's Climate Action Plan (UBC Campus + Community Planning, 2021). Amidst staggering food waste, the prevalence of food insecurity, especially among university students, is alarmingly high. 12.7% of Canadian households, 37% of UBC undergraduate students and 42% of UBC graduate students experience food insecurity (Tarasuk and Mitchell, 2020; Insights West, 2018). As of 2022, visits to the AMS Food Bank have skyrocketed by 495% since pre-pandemic levels in 2020, from 1513 total food bank visits in 2020 to 7496 visits in 2022 (Prost, 2022). Redirecting salvageable food from campus food outlets, such as the food outlets in the Nest, could reduce the amount of food ending up in the landfill while helping to lower the prevalence of food insecurity at UBC.

This project aims to promote food recovery, reduce food waste, and improve food security at UBC. We accomplished this by researching how food is wasted from Nest outlets, understanding the needs of stakeholders including the Nest outlets and AMS Food Bank, and then using these findings to develop a new Food Waste Reduction and Recovery Plan (FWRRP), outlining recommendations for the implementation of a program which would allow food to be recovered from Nest food outlets and redistributed to AMS Food Bank clients.

Our research employed a community-based action research (CBAR) approach, led by the AMS Food Bank. CBAR is a methodology where community members are "equal partners in identifying the problem to be investigated, undertaking the research itself, developing and implementing the intervention, and measuring the outcomes" (Guillon & Tilton, 2020, pp. 11). Primary methods of data collection included first, a semi-structured interview with a representative from the AMS Food Bank to frame and plan the execution of the focus groups, then, focus groups to collect data towards the creation of the first FWRRP draft, followed by a survey to get feedback on the draft FWRRP from AMS Nest food outlet representatives. Secondary data collection involved reviewing secondary sources to build an understanding of similar university campus food rescue programs.

Our research findings can be summarized into two key takeaways: (1) focus group participants from the Nest food outlets, as well as the AMS Food Bank, showed interest in the possibility of reducing food waste and promoting food security through a food recovery program, and (2), conditions which need to be met in order for this food recovery program to work include ensuring long-term continuity, accommodating variations, streamlining communication, working within existing capacities, and advocating for funding and resources. These findings were used to create the Food Waste Reduction and Recovery Plan (FWRRP), which will be appended to future AMS Food Bank transition reports in a concise and accessible format, to guide the implementation of a future food recovery program in the AMS Nest.

Our recommendations include actionable steps for the AMS Food Outlets, AMS Sustainability, and the AMS Food Bank to implement a Food Waste Recovery and Reduction Program. Short term recommendations include a pilot program to be implemented in Winter 2023-2024 and the gathering of data on potential areas of improvement during the pilot. The program will require the coordination of various AMS community members and a single point of contact to oversee its implementation and management. Long term recommendations include the expansion of the pilot program, an increase in provided resources, and consistent advocacy for sustainable practices and supporting food security initiatives.

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## LIST OF ABBREVIATIONS

**CBAR:** Community-Based Action Research

**AMS:** Alma Mater Society

**UBC:** The University of British Columbia

**FWRRP:** Food Waste Recovery and Reduction Plan

## 1. INTRODUCTION

### 1.1 RESEARCH TOPIC

“Give when you can, take when you need”: this motto for the Alma Mater Society (AMS) food bank voices the importance of donation to the bank and encourages student visits. The Food Bank is a food relief service for UBC students, faculty and staff in need, offering various perishable and non-perishable foods.

The demand for the food bank has been very high. Considering the size of the UBC community, yield from the Food Bank does not always suffice. Evidently, there are many food outlets at AMS and exploring the possibility of creating a program to redirect excess food produced by food outlets to the AMS Food Bank instead of the landfill, could be a potential way to increase Food Bank supply. Many foods at these outlets are deemed safe and consumable at the end of the day. Identifying new strategies to reduce food waste in the AMS Nest outlets can improve food security at the University of British Columbia.

### 1.2 RESEARCH RELEVANCE

Globally, approximately 31% of food meant for human consumption is lost or wasted (Food and Agriculture Organization of the United Nations [FAO], 2014). In Canada, over 58% of food meant for human consumption is wasted each year, and 32% of this is avoidable (Nikkel et al., 2019). A reduction in food waste would have the potential to reduce economic losses, reduce greenhouse gas emissions, and if this food is redirected towards those in need, reduce food insecurity.

Food waste contributes to greenhouse gas emissions and other environmental impacts. Food waste in landfills undergoes anaerobic decomposition, a process which releases methane gas, a greenhouse gas which is 25 times more potent than CO<sub>2</sub> gas (FAO, 2013). The global food system contributes anywhere from 20-50% of greenhouse gas emissions (UBC Campus + Community Planning, 2021). Canada’s yearly food waste is equivalent to 56.6 million tonnes of CO<sub>2</sub> (Nikkel et al., 2019). Our project’s aims to reduce the contribution of food waste from the AMS Nest to these emissions.

Food waste and food insecurity are interconnected. Nearly 822 million people worldwide still do not have enough food for an active and healthy life (Skaf et al., 2021). In Canada, 12.7% of households were considered

food insecure as of 2017/18 (Tarasuk and Mitchell, 2020). Food insecurity is a prevalent issue at Canadian universities. A UBC study found that a staggering 1479 out of 3490 undergraduate students at post-secondary institutions in BC (42.3%), reported experiencing food insecurity (Bottorff et al., 2020). At UBC, 35% of students have experienced food insecurity, according to an email sent to alumni (Kulkarni, 2022). At the same time, the UBC Administration cut funding to food security programs around campus by 83%, including the AMS Food Bank (UBC Sprouts, 2022). All of these factors have compounded to create a food security crisis at UBC. In response to the funding cut for 2022/23, hundreds of students walked out of class on October 21, 2022, demanding that the UBC Administration commit to long-term funding for food security (UBC Sprouts, 2022). Additionally, visits to the AMS Food Bank have skyrocketed by 495% since pre-pandemic levels in 2020, from 1513 total food bank visits in 2020, to 2373 in 2021, and 7496 visits in 2022 (Prost, 2022). This could be for many reasons, including rising costs of food, housing, and transportation (Carry et al., 2020). AMS Food Bank Coordinator, Alicia Walch, reports that despite increased funding since 2020, the increase in demand for the food bank has been so large that the increased funding cannot overcome demand. This increase in funding is also not reflective of the current economic environment Canada finds itself in, with inflation being at 12.24% since the start of the pandemic (Macklem et al, 2023). With all costs of living soaring, including an 8% increase in all student housing prices (Matassa-Fung et al, 2023), the average student struggles to find enough to eat on their budget, and even with economies of scale, the food bank struggles to find enough food to fill its shelves with the resources it has. The food bank's struggle to meet demand is also exacerbated by understaffing, limited equipment, and limited space (A. Walch, personal communication, January 25, 2023)

Redirecting salvageable food from campus food partners, in our case the AMS food outlets, could minimize the amount of food that ends up in the landfill while helping to reduce the prevalence of food insecurity among members of the UBC community.

Understandably, the struggles that UBC students face are challenging and it is supported that students take care of their well-being. This could be through many ways, one being the UBC Student Assistance Program.

### 1.3 PROJECT CONTEXT

The AMS Food Bank is an emergency food relief service for UBC students, allowing 8 visits per person/ family per semester. The Food Bank and UBC Food Services have worked in the past on a food recovery initiative, but as the visits are increasing, there is a need for more prepared foods and this project aims to seek out additional opportunities to develop a food recovery program.

Certainly, UBC has taken approaches to the food waste issue and management of surplus foods. Previously, the school has approached recovering pre-consumer food waste and non-purchased food. Open Kitchen, a UBC first-year residence dining hall, is already employing a promising practice to reduce pre-consumer food waste, by saving excess raw ingredients to be used for another recipe (Chen et al., 2022). As for non purchased food, multiple SEEDS projects have addressed food recovery at UBC; including the UBC Food Recovery Pilot Program, and a proposed food recovery program with AMS Catering and Conferences, which was not implemented (Truong et al., 2021; Woo et al., 2020).

Food recovery requires temperature control, adequate storage, and efficient distribution as critical components of successful food recovery (Nair et al., 2018). This is also an important component discussed regarding the AMS Food Bank; sometimes, storage availability concerning space and refrigerators have been an issue due to its limited capacity. Other important components include volunteers/staff, funding, infrastructure, and strong relationships between partners, according to most AMS outlet managers. The outlets at the AMS Nest appreciate a single point of contact; someone who often drops by without necessitating repeated inquiries about their location and what is to be done. Consistency would be necessary to ensure regular delivery of food to the Food Bank.

### 1.4 PROJECT PURPOSE, GOALS AND OBJECTIVES

**Purpose:** This project's overall research purpose is to promote food security & reduce food waste through food recovery.



**Goals:** In order to further the research purpose, the following goals were achieved: (1) Assess the existing AMS Nest food system, (2) Identify strategies to divert food waste within the AMS Nest, and (3) Generate and disseminate an FWRRP to implement a food recovery pilot

**Objectives:** To achieve each goal, the following objectives were set out: (1) Conduct an environmental scan to identify promising practices, (2) Interview the community to identify opportunities, barriers, & strategies for food recovery, and (3) Synthesize collected data into a food recovery pilot plan.

## 2. METHODOLOGY AND METHODS

### 2.1 RESEARCH METHODOLOGY

Community-Based Action Research (CBAR) is a methodology for researching with geographically bounded communities to “investigate an issue or problem, develop interventions, and assess outcomes” (Guillon & Tilton, 2020, pp. 11). Community members are key in this ground-up methodology as “equal partners in identifying the problem to be investigated, undertaking the research itself, developing and implementing the intervention, and measuring the outcomes” (Guillon & Tilton, 2020, pp. 11). Action research methodologies reframe the conventional power dynamic of research subject and researcher, instead embedding research partners’ perspectives and intentions into the process of generating, interpreting, and communicating co-produced research (Boser, 2006). To apply these CBAR principles, research and planning took place simultaneously, informing one another through the perspectives of our stakeholders and community partner.

Our research employed a CBAR approach during the pre-planning, peri-planning, and post-planning stages. Ethics and principles such as collaboration, participant-driven data, democratic decision-making, and community-driven solutions (Richer, 2023) informed the entire process so that the community making up the AMS Nest food system defines and drives the agenda, is allocated power within a reciprocal transfer of knowledge, and benefits practically from this process (Mulrennen et al., 2012). Specific to this project, four opportunities for community input shaped a reflective practice that honours relationship-building, co-production of knowledge, researcher accountability, and the UBC community’s strength. Upon completion, knowledge was shared back to the community in the form of the Food Waste Reduction and Recovery Plan (FWRRP), included in upcoming AMS Food Bank transition reports in a concise and accessible format.

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### 2.1.1 SAMPLING METHODOLOGY

As the proposed food recovery program will be geographically bounded by the AMS Nest, we identified the AMS Nest-affiliated food outlets as the primary stakeholders to be engaged with throughout the Community-Based Action Research process. Each food vendor follows a conventional food outlet management structure, and our group targeted managers from these food outlets. In alignment with CBAR's principle of democratic participation, we have chosen a combined purposive and quota sampling method to allow each stakeholder an equal opportunity for participation. Thus, our primary target sample size will be one managerial "representative" from each food outlet, who will be engaged as knowledge holders of their respective outlets' logistics and capacity. In total, our target sample size is nine managers (N=9, one from each food outlet) during the peri-planning process, with our primary client, an AMS Food Bank Coordinator (N=1) as the target sample size during the pre- and post-planning process.

Given that the food recovery program's success will be contingent on stakeholder commitment, we anticipated that the longevity, sustainability, and efficacy of the proposed food recovery program is dependent on participatory co-production of knowledge. It was important then that each potential participating food outlet was actively involved in the research, decision-making, and planning process. In this project, this participatory approach is applied at each stage of research, from defining research questions, analyzing & collecting data, and interpreting and taking action based on research findings.

## 2.2 RESEARCH METHODS

Our research used a mixed-method approach, conducting primary data collection and secondary research in parallel. Primary methods included semi-structured interviews and focus groups with stakeholders. Secondary methods involved an environmental scan, particularly an analysis of gray and academic literature on policies, promising practices, and leverage points applied in universities with an active on-campus food recovery program. Our research process took place across three phases: (1) Pre-Planning Preliminary Framing, (2) the Peri-Planning Research Process, and (3) the Post-Planning Review Process. The entire research process spanned over the course of February 2023 to April 2023.

## 2.2.1 PRIMARY DATA COLLECTION RESEARCH METHODS

### 2.2.1A PRE-PLANNING PRELIMINARY FRAMING

In preparation for data collection and recruitment, we conducted a semi-structured interview with the AMS Food Bank Coordinator (n=1, 100% response rate) to frame and plan the execution of the focus group component of data collection. This semi-structured interview was conducted online with the support of scripted interview questions. Specific outcomes for this semi-structured interview included: (1) collaboratively developing determinants & markers of research success, and (2) collaboratively developing the research questions and structure of the focus group sessions. This was conducted with the goal to frame the research focus in alignment with the AMS Food Banks' intentions and goals, as well as to provide decision-making power to the AMS Food Bank in fostering relationship-building during the focus groups.

Applying CBAR's principle of collaboration during this preliminary stage ensured that the knowledge collected and produced simultaneously supported the AMS Food Banks' operations and the research project's purpose of food security and waste mitigation. Although direct engagement with the AMS Food Banks' clients was outside the scope of this research process, an ongoing partnership with the organization's executives supported their capacity to effectively tailor the process towards these clients.

### 2.2.1B PERI-PLANNING RESEARCH PROCESS

Running in parallel to the planning process, an iterative stakeholder-oriented planning process was used to inform two drafts of the Food Waste Reduction and Recovery Plan (FWRRP). The peri-planning research process involved both primary and secondary research. Within the primary research, two main research approaches – focus groups & a qualitative survey – were used in the peri-planning research process leading up to this deliverable.

There were two rounds of stakeholder input. Adhering to the CBAR principle of community-driven solutions, the initial engagement round acted as primary qualitative data collection in collaboration with stakeholders, and the second engagement round acted as an opportunity for reflective data analysis with the community. While both rounds were initially planned as focus groups, the second round shifted to an online survey at the discretion of both the research team and the research client.

These interviews were conducted with the AMS Nest food outlet stakeholders, with a combined purposive and quota sampling method as mentioned in the sampling methodology section. Recruitment took place primarily through email correspondence, diversified as needed and guided by the existing relationships between our primary partners, the AMS Food Bank Coordinator & the AMS Sustainable Food Systems Coordinator, and the AMS-affiliated food outlet managers. Following primary data collection, a thematic analysis was conducted on recorded and transcribed focus group interviews and survey responses. The resulting codes can be found in Appendix A. T

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#### 2.2.1B.1 FIRST ROUND: FOCUS GROUPS

The first round of focus group engagement served to collect data towards the creation of the first FWRRP iteration. One focus group question script was used to host three separate in-person focus groups. A 66% attendance rate was achieved, with an achieved sample of six participants (n=6) from a target sample of nine participants (N=9).

Specific outcomes for these first round of focus group interviews included: (1) identifying common sources of food waste and food loss within each food outlet, (2) gauging individual stakeholder interest, resources, & capacity, (3) outlining the community stakeholders' collective conditions for commitment and participation, and (4) collaboratively developing determinants & markers of a successful food recovery program. This was conducted with the aim of (1) building relationships of reciprocity, a key CBAR ethical consideration in knowledge sharing (Maiter et al., 2008), (2) assessing opportunities and parameters for food recovery partnerships with the AMS Food Bank, and (3) compiling logistical barriers and opportunities toward building a food recovery network.

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#### 2.2.1B.2 SECOND ROUND: ONLINE SURVEY

Results from the first round of focus groups were compiled and analyzed to create the first iteration of the FWRRP. During the second round of focus groups, the results and the draft FWRRP were shared to AMS Nest food outlet representatives, who were prompted to engage in reflective data analysis. An 11% response rate was achieved, with an achieved sample of one participant (n=1) from a target sample of nine participants (N=9). Qualtrics was used as the online survey host, disseminated directly to the target sample through email correspondence.

Specific outcomes for the second round of focus groups included (1) furthering inter-stakeholder relationships, (2) collecting stakeholder feedback on the proposed FWRRP's feasibility and efficacy, and (3) updating the research team on stakeholder interest, resources, & capacity given the proposed FWRRP. This was conducted with the aim of (1) ensuring that data analysis and interpretation is accurate to the stakeholders' intentions, (2) assessing the feasibility, barriers, and limitations to the proposed FWRRP, and (3) outlining needed changes to improve the FWRRP's feasibility & efficacy.

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#### 2.2.1C POST-PLANNING REVIEW PROCESS: CLIENT INPUT

Following the conclusion of both iterations of the FWRRP and all focus groups, a final review by the project client, the AMS Food Bank Coordinator took place through a semi-structured interview (n=1, 100% response rate). A semi-structured interview question script was used to structure client input – finalizing the completed document, making any final edits, and ensuring that the plan remains within the scope and goals of the AMS Food Bank. After this review process, this FWRRP was appended to the AMS Food Bank and AMS Sustainability representative's future transition reports to be implemented and disseminated at their discretion.

#### 2.2.2 SECONDARY DATA COLLECTION RESEARCH METHODS

During the peri-planning research process, an environmental scan was conducted to build an understanding of similar university campus food rescue programs, using secondary sources over the course of March and early April 2023. This use of secondary research supplemented the data gathered during the stakeholder engagement in the creation of the FWRRP. We (1) outlined challenges and barriers to execution of food recovery programs at other institutions, and (2) identified promising logistical practices for food recovery program implementation.

The environmental scan began with a systematic search of the key terms "food recovery", "university", "campus", "food waste", "food recovery network", and "food rescue" through the UBC Library database, filtering for academic peer-reviewed sources. Researchers identified 48 articles after screening for relevance by reading abstracts, skimming through contents, and searching for keywords. To further narrow the scope of search, a criteria restricting eligible papers to North American contexts was applied. The remaining 25 academic articles

were reviewed, scanning for common themes and concepts. A table was created to summarize common concepts, and highlight frequently recurring themes. The most frequently appearing themes and concepts were applied, and corresponding sources were reviewed once more to write a detailed description of the theme. Similarly, a gray literature scan was conducted using a cursory search of the same key terms and criteria.

Results from both academic and gray literature were combined, with common themes and ideas grouped as either challenges and promising practices. During the planning process, these results were compared to primary research results, and areas of discrepancy were discussed with the project client.

## 2.3 METHODS OF ADMINISTRATION

### **Pre-Planning Preliminary Framing**

During the pre-planning preliminary framing process, recruitment and communications took place through email correspondence through the research team's primary point of contact. The semi-structured interview took place through an online video conference software, Zoom. This was chosen in order to accommodate the scheduling and capacity of the AMS Food Bank Coordinator. This portion of the research process took place between February 27th, 2023 and March 1, 2023.

### **Peri-Planning Research Process**

At all points during the peri-planning research process, direct email correspondence from the research team's primary point of contact to the target sample was used for recruitment and communications. During the first round (focus groups), all focus groups were conducted in-person within the AMS Nest. This location was chosen due to the interviewees' familiarity with the spaces, and to facilitate coordination for all parties involved. In-person focus groups were selected as the research method to allow for spontaneous interactions between interviewees, and to facilitate relationship-building within the AMS Nest. These three focus groups took place between March 5, 2023 and March 10, 2023. During the second round (online survey), surveys were hosted using the online platform Qualtrics. An online survey format was chosen in order to facilitate critical feedback through participants' anonymity, as well as to work within the staffing capacity of the AMS Nest outlets. This was chosen

due to its data security measures, familiarity within the UBC community, and ease of use. This survey was conducted between March 15, 2023 and March 22, 2023.

### Post-Planning Review Process

During the pre-planning preliminary framing process, recruitment and communications took place through email correspondence through the research team's primary point of contact. The semi-structured interview took place through an online video conference software, Zoom. This was chosen in order to accommodate the scheduling and capacity of the AMS Food Bank Coordinator. This portion of the research process took place on April 19th, 2023.

## 3. RESULTS

### 3.1 RESULTS OF PRIMARY DATA COLLECTION

From the three focus groups, participants identified key components of food recovery by answering questions under four guiding themes: 1) sources of food waste, 2) imagining a food recovery program, and 3) interest, capacity, and resources. The findings generated helped identify key components of food recovery, while helping generate the Food Waste Reduction and Recovery Plan.

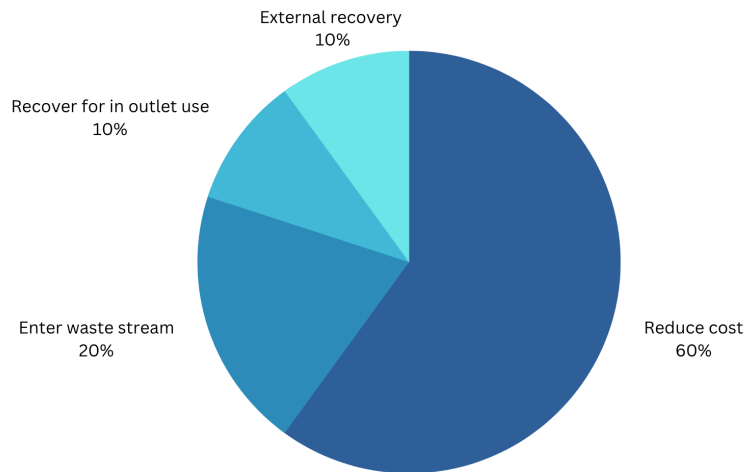
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#### 3.1.1 THEME 1: SOURCES OF FOOD WASTE

The most common sources of food waste from all AMS outlets occur as pre-consumer food waste, which includes all food waste that occurs at the preparatory stage, within the AMS outlet kitchens, before reaching consumers. Food that is identified as waste does not always enter the waste stream, two AMS outlet managers mentioned that food that is recorded as food waste is given to staff members to take home or eat on site during break times. Outlet managers noted items that were most commonly wasted included small portions of cooked grains, bread ends, and prepared produce that would not be vendable to customers the next business day. One manager made note that the amount of food waste produced varied day-to-day, with the most waste occurring on Fridays, as the outlet is not open on weekends and food would not be good to sell the following business day based on aesthetics, food safety, or overall quality.

The second part of the 'sources of food waste' theme was centered around identifying any existing food recovery efforts the AMS food outlets had in place. Through the thematic analysis, the researchers found that existing food recovery efforts were mentioned 9 separate times throughout the focus groups. Majority of outlets had some type of food recovery strategy, or pre-emptive method to reduce food waste either from back-of-house, or through customer-facing methods. One outlet manager mentioned reducing their food waste through repurposing vegetable trimmings into soup stock or finding ways to utilize every part of the vegetable to minimize waste. Two outlets also highlight that they design their menu and procurement plan to meet demand without any excess. From a customer-based approach, all outlets expressed wanting to reduce food waste through selling available food. As seen in Table 1, the most popular approach to this was to reduce costs to the consumer in hopes to incentivize purchasing items that could not be sold the next day due to food safety concerns or were not of ideal quality or freshness. Likewise, one outlet identified selling day-old items for a nominal price was encouraging for customers and these items always sell out. 10% of participants mentioned repurposing potential food waste sources in another way in the outlets and an equal number mentioned that they used an external food recovery app, Copenhagen-based Too Good to Go, allowing for consumers to purchase food at a reduced rate. Lastly, 20% of outlet managers expressed that food entered the waste stream as compost, though it is important to note that occasionally managers allowed staff to take food home but recorded this as food waste in their records. All outlet managers present at focus groups expressed having some type of existing food recovery framework in place, motivated by high cost of food, desire to feed hungry students, or environmental and climate reasonings, or a combination of any of these reasons. AMS food outlet managers identified their most common sources of food waste and expressed their current food waste reduction and recovery efforts within their production and serving levels.





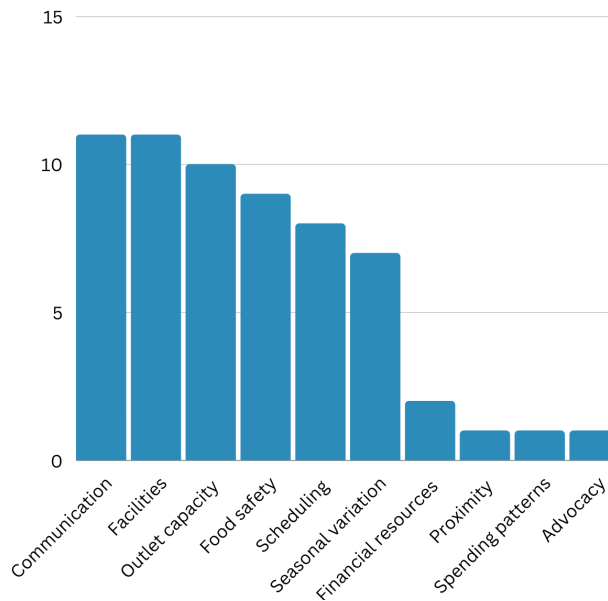
**Figure 2:** Participant responses to current food waste recovery within AMS food outlets.

### 3.1.2 THEME 2 – IMAGINING A FOOD RECOVERY PROGRAM

Food outlet managers, when asked to describe elements of a successful food recovery program, outlet managers highlighted many factors that would determine a program's effectiveness. Looking at Table 2, the components mentioned most frequently in the focus groups were having clear communication and utilizing AMS facilities for increased food safe storage for recovered food; each was brought up by 18% of participants. AMS food outlet managers agreed unanimously that this was important for a successful food recovery program. Looking at the next two categories which were most frequently mentioned included capacity of outlet managers and staff and the importance of food safety, with 16.4% and 14.8% response rate respectively. The last components of successful food recovery that were highlighted multiple times by participants were accommodating for the different closing times and schedules of different outlets, and the amount of recoverable food that varies seasonally. Looking at the categories that were mentioned the least, having short distances of travel for food recovery, looking at the spending patterns of customers, and advocacy for funding, storage space, and additional resources were only mentioned one time each in the focus groups, despite being important in the success of a food recovery program within the AMS Nest. As one participant observed the following:

“...one of the recommendations I made was to turn the space across from the Food Bank to a walk-in fridge [and] freezer which would be more than enough space for the food bank and food recovery. This is up to the AMS executives and out of my control, but it is totally doable.” (Anonymous, March 10, 2023).

Outlet managers identified the most important components for their individual outlets, though there were many similarities in the top responses across all outlets.



**Figure 3:** Breakdown of participant mentions of key components of a food recovery program

The most frequently mentioned components for a successful Food Waste Reduction and Recovery Plan were highlighted as key objectives. These objectives are as follows:

1. Ensure continuity through committed personnel and a secure funding source
2. Accommodate variations in outlet needs by working through different scheduling needs, food perishability, and seasonal operations
3. Streamlining communication between food outlets and AMS Food Bank Coordinator (food recoverer) to ensure rescuable food remains food safe and picked up in a timely manner
4. Acknowledge capacity of outlet staff and minimize additional tasks for successful food recovery
5. Expand food recovery within the AMS by utilizing existing resources and facilities

### 3.1.3 THEME 3 – INTEREST, CAPACITY, AND RESOURCES

The first part of this theme was centered around non-negotiable components, the “needs”, for each outlet to be able to partake in a successful food recovery program. Two out of six managers interviewed expressed

needing an option for both regularly scheduled pickups as well as on-demand pickups to accommodate daily variation in the quantity of food that is available to be recovered. To ensure these on-demand pickups could be accommodated, participants identified the need for clear communication through a single point of contact; this need was agreed upon by all outlet managers.

Asking them to reflect on what would make a food recovery more appealing, managers highlighted their “wants” for each specific food outlet. All focus group participants agreed upon having a process that would not increase the workload managers or their staff; having a simple, easy to follow plan that would not deduct their attention from other tasks and could be integrated into existing workflows.

Lastly, overall interest and capacity was gauged by participant responses. From this, all participants expressed their interest in adopting a FWRRP as they believed food recovery was very important and could be achieved within their outlets. Two participants expressed the need for all outlets to unanimously agree to participate in this project to ensure a highly organized and streamlined food recovery donation process. This would enable the sharing of resources and materials needed to have the capacity to donate to the Food Bank.

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### 3.1.3 AMS FOOD OUTLET POTENTIAL FOOD RECOVERY PROCESS

Analyzing key points from primary data sources and focus groups, the researchers devised a five-step process outlining how food recovery would work within the AMS Nest, which was included in the final FWRRP deliverable (Appendix E)

## 3.2 RESULTS OF SECONDARY DATA COLLECTION

Through our secondary data collection, we conducted an environmental scan to build an understanding of similar university campus food rescue programs, using secondary sources. We (1) outlined challenges and barriers to execution of food recovery programs at other institutions, and (2) identified promising logistical practices for food recovery program implementation. These four challenges were communication, funding, food safety and quality, and pick-up logistics. We also identified various promising practices for food recovery programs that address each of these four challenges, as shown in the table below.

Note: “Stakeholders” refers to all organizations or individuals involved in the food recovery process, including the organization responsible for providing the food to be recovered, the organization receiving the recovered food, and the organization or individuals transporting, repackaging, and/or storing the recovered food (if applicable).

Challenge	Example of challenge from literature	Promising Practices from literature
Strength of relationship and <b>communication</b> between stakeholders	<p>Referring to the Campus Kitchens Program, a food recovery effort in the United States, Himmelheber states that “Relationships, including face-to-face and other communication efforts, between CKP representatives and their community partnerships lacked depth and were characterized by superficial interactions,” and that “once partnerships are underway, changes and modifications [to agreements] are infrequent” (2016).</p> <p>Wright et al. also list consistent communication among stakeholders as key to ensuring program stability and success, in a food recovery program called the Food Fighters (2021).</p>	<p>Prioritize relationship-building with stakeholders (Food Recovery Network, n.d.).</p> <p>Conceptualize the role of the organization receiving recovered food as a <i>collaborator</i> rather than just a <i>recipient</i> (Himmelheber, 2016).</p> <p>Establish an official communication agreement, and a list of expectations for which items are acceptable to donate (Food Recovery Network, n.d.)</p> <p>Communicate the needs and contributions of each stakeholder (Wright et al., 2021).</p> <p>Continue to communicate and modify agreements based on needs and circumstances (Himmelheber, 2016).</p>
<b>Funding</b> for program space, funding, and resources	<p>Wright et al. list funding as a potential obstacle that food recovery programs may face (2021).</p> <p>Tucker discusses how grant funding from the Food Recovery Network (an extensive network of food recovery programs across more than 11 university campuses) has benefitted food recovery programs, by allowing them to purchase equipment such as reusable aluminum trays to transport food (2013).</p>	<p>Obtaining institutional support and internal grants for funding (OoNorasak et al., 2022; Tucker, 2013; Food Recovery Network, n.d.)</p> <p>Obtain local and/or national grant funding (Wright et al., 2021)</p>
<b>Safety and quality</b> of recovered food	<p>Wright et al. list adherence to food safety protocols as key to ensuring program success (2021). They also highlight how providing quality food ensures the dignity of those receiving it (Wright et al., 2021).</p>	<p>Minimize food safety risks associated with pathogen growth by minimizing time in the Food Temperature Danger Zone (41°-135°F) to less than one hour, by either freezing it on site and delivering it frozen, or delivering the food straight to the recipient organizations while hot (Tucker, 2013).</p>

		<p>Dispose of food that does not meet food safety standards (OoNorasak et al., 2022).</p> <p>Purchase insurance to deal with liability issues (Tucker, 2013)</p> <p>Comprehensive food safety training for program volunteers (Food Recovery Network, n.d.)</p>
<b>Logistics</b> of food pick-up	The Food Recovery Network’s Food Recovery Guide emphasizes the importance of having a clear logistical plan for food pick-up and transport (n.d.)	<p>Two types of pick-up strategies:</p> <ol style="list-style-type: none"> <li>1) Regularly scheduled (OoNorasak et al., 2022)</li> <li>2) Real-time notifications for food pick-up with a half hour time window (Frank, 2020).</li> </ol>

**Table 2:** Summary of prominent challenges and promising practices for food recovery programs at other institutions

## 4. DISCUSSION

### 4.1 LINKS BETWEEN RESULTS

Overall, our findings from primary and secondary research can be summarized into two key takeaways:

- 1) Focus group participants from the Nest food outlets, as well as the AMS Food Bank, showed interest in the possibility of reducing food waste and promoting food security through a food recovery program.
- 2) Conditions which need to be met in order for this food recovery program to work include ensuring long-term continuity, accommodating variations, streamlining communication, working within existing capacities, and advocating for funding and resources.

In this discussion, we will explore connections between our primary and secondary data collection, and how our findings informed the content of the FWRRP deliverable (Appendix E). A summary of this discussion is also available in Appendix D.

#### 4.1.1 ENSURING CONTINUITY

Continuity was not as common of a theme in the literature, possibly because most of the literature available on food recovery programs at universities is about those programs that were successful, whereas there

seems to be less literature on failed or discontinued programs. However, continuity was frequently raised as a concern in the focus groups. Focus group participants were most concerned with the continuity of two elements: personnel, and resources. In regard to continuity of personnel, “staffing” was mentioned 7 times by AMS Nest food outlet managers, who raised concerns about the quick turnover of student positions. This concern was also echoed by Alica Walch (AMS Food Bank Coordinator) and Andy Thompson (AMS Sustainable Food Systems Coordinator), who emphasized the importance of transition documents in ensuring continuity of this project. The idea of having paid personnel leading the program contrasts many of the food recovery programs described in the literature, which are led by student volunteers. While sources like Wright et al. (2021), OoNorasak et al., (2022), and the Food Recovery Network (n.d.) present convincing arguments for how student volunteers can acquire valuable skills and experiences through participation in a food recovery program, these benefits were overshadowed by AMS Nest food outlets voicing strong support for having a paid single point-of-contact personnel for the program, to ensure continuity and ease of communication (see 4.1.3 - Streamlining Communication). Continued resources and funding are also needed for operational costs of the program, with “financial resources” mentioned twice in the focus groups (see 4.1.5 - Advocating for Funding and Resources). Thus, in the FWRRP, we prioritized ensuring the ongoing presence of paid personnel and consistent funding and resources for the program.

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#### 4.1.2 ACCOMMODATING VARIATIONS

Focus group findings found that it is necessary to accommodate for three main variations between outlets: scheduling preferences (mentioned 8 times), seasonal variation (mentioned 7 times), and perishability (mentioned 9 times). For example, outlets have different scheduling preferences for food pickup due to different closing times. The amount of food waste they produce varies seasonally and more food waste is possible immediately before breaks in university scheduling such as reading weeks. Finally, different pick-up logistics are required depending on when recovered food will perish (for example, same-day perishables or end-of-week perishables).

Additionally, two contrasting pick-up strategies emerged from the literature review. Some programs such as that which is described in OoNorasak et al. found that the best practice was to implement a regular weekly time for food pickup (2022). Conversely, Frank et al. found it more effective to use real-time notifications to have recipients pick up food within a half hour window of time when it becomes available (2020). The example in Frank et al. differs from our proposed food recovery program in that they had recipients directly pick up their portion of recovered food (a model comparable to the app Too Good to Go), whereas in our case recipients would receive the food through the AMS Food Bank (2020). We adapted this second strategy according to a scenario described by one focus group participant where a food outlet can directly communicate with a single point of contact (see 4.1.3 - Streamlining Communication) to have food picked up for recovery on a case-by-case basis.

Based on the need to accommodate variations and the two pick-up strategies presented in the literature, the FWRRP recommends allowing for both options - regularly scheduled pickups for larger outlets, and case-by-case communication for smaller outlets.

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#### 4.1.3 STREAMLINING COMMUNICATION

Both the literature and focus group findings emphasized the importance of strong relationships and communications between stakeholders. Strategies to strengthen stakeholder relationships and communication from the literature include conceptualizing the role of the organization receiving the food as an active collaborator rather than a passive recipient (Himmelheber, 2016), establishing an official communication agreement and clear expectations based on the needs of each stakeholder (Food Recovery Network, n.d.; Wright et al., 2021), and continuing to modify the agreement as circumstances change (Himmelheber, 2016). Focus groups mentioned the importance of communication a total of 11 times.

One idea for effective communication which emerged from the focus groups was having a single point of contact (mentioned 5 times). This single food-safety trained food recovery personnel would act as a point of contact for pickup and communication with AMS Nest food outlets. In addition to prioritizing strong relationships between stakeholders, the FWRRP recommends having this single point of contact. This would limit confusion, build trust, and increase efficiency of communication between the food outlets and AMS Food Bank.

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#### 4.1.4 WORKING WITHIN EXISTING CAPACITIES

While focus group participants were enthusiastic about a potential food recovery program, overall interest is dependent on working within the current staffing capacities of the AMS Nest food outlets. In order to support sustained participation in the food recovery program, the FWRRP is structured to minimize additional or diverted time for staff at participating food outlets. “Outlet capacity” was mentioned 8 times in the focus groups, and it connects back to literature which recommended establishing an agreement based on the needs of each stakeholder (see 4.1.3 - Streamlining Communication; Food Recovery Network, n.d.; Wright et al., 2021).

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#### 4.1.5 ADVOCATING FOR FUNDING AND RESOURCES

Much of the literature mentioned food safety and quality as a key challenge faced by food recovery programs (Wright et al., 2021). Various approaches have been taken to ensure food safety and quality. Promising practices which could be applicable to the AMS Nest include minimizing time in the Food Temperature Danger Zone (41°-135°F) to less than one hour, by either freezing it on site and delivering it frozen (Tucker, 2013). The idea of rapidly freezing recovered food was also suggested in the focus group (“blast chiller” was mentioned 2 times),, identifying an infrastructural investment for freezing food that was not currently being used by the AMS, due to an issue with power supply. Additionally, the AMS Food Bank lacks adequate fridge and freezer space to safely store a large amount of recovered food. Thus, the FWRRP prioritizes utilizing existing resources, as well as advocating increased space, funding, and resources to ensure safety and quality food. It is our hope that the promising practices and success stories of other food recovery programs found in the literature may help to advocate for space, funding, and resources for a food recovery program at UBC.

#### 4.2 IMPLICATIONS

In terms of research objectives, we completed an environmental scan to identify promising practices, and interviewed the community to identify opportunities, barriers, and strategies for food recovery. In terms of research goals, we assessed the existing AMS Nest food system through interviews with the AMS Food Bank coordinator and AMS Sustainable Food Systems Coordinator, as well as data collected in the focus groups about sources of food waste and existing practices to reduce it. We identified strategies to divert food waste within the



Nest through both data collected in the focus groups as well as promising practices identified in the literature. Primary and secondary data was synthesized to create the FWRRP. Overall, our research has the potential to promote food security and reduce food waste through food recovery, contingent on the FWRRP being implemented in a timely manner. While it is not likely that we will see quantifiable changes in the amount of food recovered, food waste levels, and/or food security until the actual implementation of the FWRRP, this research has helped to put these topics - food recovery, food waste, and food security - at the forefront of AMS Nest food outlet managers, AMS Sustainability, and the AMS Food Bank's agendas.

Our research has advanced understanding of the specific priorities, needs, and circumstances of the AMS Food Bank and AMS Nest Food outlets for a potential food recovery program. We have taken knowledge of other university food recovery programs and identified which promising practices are applicable to the AMS Nest. Going forward, the FWRRP presents clear steps for the future AMS Sustainable Food Systems Coordinator and AMS Food Bank Coordinators to implement this food recovery program.

#### 4.3 UNEXPECTED FINDINGS

Focus group participants drew attention to existing resources and facilities which are not currently being used, including an expensive piece of infrastructure to rapidly freeze food. While a solution to the power issue causing this infrastructure to be unusable has not yet been identified, the FWRRP does recommend making use of existing infrastructure to minimize inefficiencies (see 4.1.5 - Advocating for Funding and Resources). In addition, focus group findings showed a high degree of interest in expanding food recovery beyond AMS Nest food outlets, especially to recover food from AMS Catering + Conferences, which some focus group managers anecdotally observed to be the greatest source of food waste within the AMS. A previous SEEDS project looked at this possibility, however the program is not currently running (Woo et al., 2020). While Catering + Conferences was outside the scope of this report, the possibility of expanding the food recovery program to include it has been included as a recommendation for future research .

### 4.3 DATA LIMITATIONS

We had originally hoped to have a larger sample size for our focus groups by interviewing all AMS Nest outlet managers. Due to scheduling limitations, not all managers were able to attend the focus groups. However, the overseeing manager of all AMS Food outlets was able to attend, so no food outlet was completely left out.

In addition, the FWRRP does not go into specifics about the logistics of food safety in the recovery program. Researchers did not have as strong of a background in this area, resulting in not asking as specific of questions about food safety during the focus groups. Retrospectively, if the literature review had been done prior to the focus groups, researchers may have had more specific food safety questions to ask in the focus groups

Finally, the success of this proposed program depends on the FWRRP being implemented in a timely manner. While the data is accurate to the perspectives and circumstances of food outlets now, major changes in the future (for example, a global pandemic) could render this plan outdated.

## 5. RECOMMENDATIONS

### 5.1 RECOMMENDATIONS FOR ACTION

Based on our findings, we have developed a series of actionable steps that AMS Food Outlets, AMS Sustainability, and the AMS Food Bank can implement. The timeline for recommendations includes both a short term plan, to be carried out within the next year, as well as a long-term plan, which is to be carried out after the end of next school year. These recommendations are meant to assist AMS Food Outlets, AMS Sustainability, and the AMS Food Bank in the creation of a Food Waste Recovery and Reduction Program, helping increase the sustainability of current AMS Food Outlets operations, as well as reduce food insecurity on UBC Campus.

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#### 5.1.1 SHORT TERM RECOMMENDATIONS

Our short term recommendations consist of actions that AMS Food Outlets, AMS Sustainability, and the AMS Food Bank can take over the next year to begin implementing a Food Waste Recovery and Reduction Program. This mainly consists of the implementation of a pilot program to take place at AMS Food Outlets, as well as gathering data on potential areas of improvement during the pilot.

#### 5.1.1.1 SHORT TERM: PILOT PROGRAM

This proposed pilot plan would take place over the course of the Winter 2023-2024 academic terms, from September 2023 to April 2024. It is based on research results in consultation with stakeholders and implementing their feedback. This project will require the coordination of various AMS community members, such as, AMS Nest Food Outlet Managers & Staff, AMS Sustainable Food Systems Coordinator, AMS Food Bank Coordinator, and AMS Executives. However, tangible implementation will generally be led by the assigned single point of contact. The initial coordination and planning for the pilot program will take place next term, from September 2023 to December 2023. During this period of time it is essential that key stakeholders coordinate which food outlets are going to implement the pilot program and how best to implement it. Also crucial during this period of time will be deciding what the key evaluation criteria will be regarding measures of success for the program. During term two of next year, January 2024 to April 2024, the primary point of contact and the AMS Food Outlets that are participating in the pilot program will implement the plan. During that same period, a student research team will be recruited to evaluate the pilot, based on the previously decided key evaluation criteria. They will be tasked with finding areas for potential improvement and additional points for advocacy.

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#### 5.1.1.2 SHORT TERM: TIMELINE

##### *Term 1: September-December 2023*

- **Coordination:** The food recovery primary point of contact, the AMS Food Bank Coordinator, engages in meetings with interested food outlet managers at the AMS Nest to ensure the effective coordination of logistics surrounding the recovery of surplus food, including the scheduling of food pickups. Stakeholder feedback is continuously integrated into the planning process as it is received. The proposed pilot program is scheduled to commence in January 2024.
- **Evaluation Planning:** The primary point of contact applies for a Term 2 SEEDS project to conduct a comprehensive evaluation of the pilot program, with a preference towards using the LFS 450 course to facilitate this process.

*Term 2: January-April 2024*

- **Pilot Implementation:** The food recovery primary point of contact collaborates with the managers of AMS Food Outlets to conduct a pilot program aimed at recovering surplus food items that would otherwise be discarded. Through this pilot program, the primary point of contact and the AMS Nest food outlet hope to establish an effective model for food recovery that can be scaled up and replicated in other locations.
- **Evaluation:** A student research team conducts an evaluation of the pilot's effectiveness and challenges, through the UBC SEEDS Sustainability Program. Deliverables will be used to suggest improvements in implementation and points for advocacy.

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5.1.1.3 SHORT TERM: RECOMMENDATIONS AND CONSIDERATIONS

**Single Point of Contact - AMS Food Bank Coordinator**

The successful execution of the food recovery pilot program necessitates a centralized point of contact responsible for overseeing its implementation and management. To this end, it is recommended that a paid position be established to fulfill this crucial role. One such position is that of the AMS Food Bank Coordinator, who possesses the necessary expertise and experience to effectively coordinate food recovery efforts. The AMS Food Bank Coordinator's responsibilities include meeting with interested food outlet managers at the AMS Nest to establish a framework for the recovery of surplus food items. This involves developing a comprehensive plan to address logistics such as food pickup scheduling, transportation, and storage, as well as establishing procedures to ensure that all food safety regulations are met. Additionally, the AMS Food Bank Coordinator is responsible for liaising with stakeholders and continuously soliciting feedback to improve the program's effectiveness. Given the critical nature of the AMS Food Bank Coordinator's role in overseeing the food recovery pilot program, it is imperative that the position be filled by an individual with a strong track record of successful project management and stakeholder engagement.

### **Advocacy - AMS Sustainable Food Systems Coordinator**

According to our research, insufficient facilities, funding, and resources are a primary obstacle to effective food redistribution efforts. Recognizing the importance of these factors in ensuring the success of the food recovery pilot program, there is a need for consistent advocacy to secure sufficient resources, funding, and facilities. This advocacy is critical to promote sustainable practices and support food security initiatives. To achieve this goal, it is essential to identify the effectiveness, strengths, and opportunities for improvement of the food recovery pilot program. This process aligns with the overarching goal of advocating for sustainable food systems and supporting food security efforts. As such, the AMS Sustainable Food Systems Coordinator will spearhead this initiative to ensure that the food recovery pilot program aligns with the broader goals of sustainable food systems advocacy.

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#### 5.1.2 LONG TERM RECOMMENDATIONS

As the food recovery program pilot is completed in April 2024, it is important to plan for the program's long-term continuity and success. With this in mind, there are several goals that we aim to achieve through the program. Firstly, we seek to ensure the continuity of the food recovery program, which involves securing sufficient funding, resources, and facilities. Secondly, we aim to enhance food security in the UBC community by providing surplus food items to those in need. Thirdly, the program is designed to promote a robust circular economy through the recovery and redistribution of food items that would otherwise go to waste. Finally, we aim to tailor the program's operational model to the unique needs and characteristics of the UBC community to ensure its sustainability and effectiveness. By pursuing these long-term recommendations, we can establish a food recovery program that aligns with our broader goals of promoting sustainable practices, supporting food security, and reducing food waste.

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#### 5.1.2 LONG TERM: RECOMMENDATIONS AND CONSIDERATIONS

To ensure the success and continuity of the food recovery program, we must integrate it within the larger framework of sustainable food systems at UBC. One way to achieve this is by integrating the role of single point of contact within the responsibilities of the AMS Sustainable Food Systems Coordinator. This will help to streamline

communication and coordination efforts between different stakeholders involved in the program. Additionally, we must integrate the food recovery program within the AMS funding structures and allocate permanent sources of funding for a paid role to manage the program's operations. Advocacy efforts will be critical to secure the necessary funding, facilities, space, and resources for the food recovery program. One potential avenue for advocacy is through the Sustainable Food Systems Project Fund, which can provide financial support for initiatives that promote sustainable food systems at UBC. The AMS Sustainable Food Systems Coordinator will lead the advocacy efforts internally within AMS to ensure that the food recovery program receives the necessary resources and support. If the food recovery program is successful, it should be expanded beyond its initial scope. This includes expanding the program to include UBC Conferences & Catering and other potential partners. Through this expansion, we can further enhance food security and promote sustainable practices across the UBC community. By pursuing these actions, we can establish a food recovery program that aligns with our broader goals of promoting sustainable practices, supporting food security, and reducing food waste.

## 5.2 RECOMMENDATIONS FOR FUTURE RESEARCH

There are several areas that could benefit from further research related to the food recovery program. Firstly, there is a need to examine the program's impact on food waste reduction and food security in the UBC community. A comprehensive study can help to quantify the amount of food waste that is diverted from landfills through the program and assess the effectiveness of the food recovery efforts in meeting the needs of food-insecure individuals in the community. Secondly, there is a need to examine the social and environmental impact of the food recovery program. This can include evaluating the program's ability to promote sustainable practices and reduce greenhouse gas emissions associated with food waste, as well as assessing the social benefits of providing food to those in need. Finally, research into the possibility of expansion of the program to other stakeholders in the UBC Campus food system, such as UBC Food Services should be conducted, as well as the potential scalability to the wider community and other communities as well.

## 6. CONCLUSION

Throughout this project, we have conducted extensive research into the potential for an AMS Food Outlet food recovery program, seeking to identify existing best practices, challenges, and opportunities for improvement. Through our secondary research, we have gained valuable insight into the organization of food recovery programs at other post-secondary institutions in Canada and the U.S., and the barriers they face. These barriers include funding, sustainability, labor and volunteer turnover, food safety and liability, and transportation and storage logistics. Based on our findings, we have made recommendations to mitigate these barriers and support the sustainability of an AMS Food Outlet food recovery program. The program's potential for success rests on several key factors, including effective coordination and communication between program partners, as well as the availability of dedicated resources and funding for program operations. Additionally, the program must focus on tailoring its operational model to the specific needs of the UBC community in order to help ensure its sustainability and relevance over time. We believe that these recommendations, if implemented, will help to ensure the continuity and success of the program over the long term. We also believe that the insights from our research have the potential to create positive change in the way that UBC deals with surplus food on campus, and that this program can serve as a model for other organizations on campus seeking to address similar issues. We would like to thank our interviewees, partners, clients, SEEDS representative, and course instructor for their support and guidance throughout this project. In conclusion, the UBC food recovery program offers a promising solution to the problem of food waste and food insecurity on campus. Through ongoing research and support, we hope to see this program continue to thrive and serve as a model for sustainable food systems in the future.

## REFERENCES

- ACET, Inc. (2011). The art of facilitating focus groups. *National Consortium of Interpreter Education Centres*.  
[http://www.interpretereducation.org/wp-content/uploads/2015/02/NCIEC\\_focus\\_group\\_manual\\_07-20112.pdf](http://www.interpretereducation.org/wp-content/uploads/2015/02/NCIEC_focus_group_manual_07-20112.pdf)
- AMS of UBC Food Bank Food Distribution Guidelines Preamble. (2020). Retrieved February 8, 2023, from  
<https://www.ams.ubc.ca/wp-content/uploads/2020/11/AMS-of-UBC-Food-Bank-Food-Distribution-Guidelines-1.pdf>
- AMS Sustainable Action Plan. (2020). Retrieved February 8, 2023, from  
<https://www.ams.ubc.ca/wp-content/uploads/2021/02/AMS-Sustainable-Action-Plan-ASAP.pdf>
- Asuncion, M. (2022). *AMS Food Bank to relocate to larger space amidst growing demand*. The Ubyyssey.  
<https://ubyssey.ca/news/ams-food-bank-to-relocate-to-larger-space-amidst-growing-demand/>
- Bierma, Thomas J, M.B.A., PhD., Jin, Guang, ScD., P.E., & Bazan, Christy N, MPH, L.E.H.P., M.C.H.E.S. (2019). Food donation and food safety: Challenges, current practices, and the road ahead. *Journal of Environmental Health*, 81(10), 16-21.  
<https://www.proquest.com/scholarly-journals/food-donation-safety-challenges-current-practices/docview/2264121248/se-2>
- Boser, S. (2006). Ethics and power in community-campus partnerships for research: Ethics and action research. *Action Research* (London, England), 4(1), 9-21.
- Bottorff, J. L., Hamilton, C., Huisken, A., & Taylor, D. (2020). Correlates of food insecurity among undergraduate students. *Canadian Journal of Higher Education* (1975), 50(2), 15-23.  
<https://doi.org/10.47678/cjhe.v50i2.188699>
- Carry, A., Szeri, A., Sadiq, R., Mullings, D. (2020). *Student Affordability Task Force report and recommendations (affordability plan)*. University of British Columbia Board of Governors.  
[https://bog3.sites.olt.ubc.ca/files/2022/03/2.1i\\_2022.03\\_Student-Affordability-Task-Force.pdf](https://bog3.sites.olt.ubc.ca/files/2022/03/2.1i_2022.03_Student-Affordability-Task-Force.pdf)
- Chen, L., Go, K., Lee, D., Liu, L., & Stewart, S. (2022). Cost-benefit analysis of pre-consumed food waste and development of a food waste baseline: A food waste recovery initiative. UBC Open Collections.  
<https://open.library.ubc.ca/media/stream/pdf/18861/1.0421549/2>
- Deaton, J., Scholz, A., & Lipka, B. (2019). An empirical assessment of food security on First Nations in Canada. *Canadian Journal of Agricultural Economics*, 68(1), 5-19. <https://doi.org/10.1111/cjag.12208>.
- Dunna, S., & Tarasuk, V. (2021). Black–white racial disparities in household food insecurity from 2005 to 2014, Canada. *Canadian Journal of Public Health*, 112(5), 888-902. <https://doi.org/10.17269/s41997-021-00539-y>
- Food and Agriculture Organization of the United Nations. (2014). *Mitigation of food wastage: Societal costs and benefits*. <https://www.fao.org/3/i3989e/i3989e.pdf>
- Food Recovery Network. (n.d.) *Food Recovery Guide*. Retrieved April 19 2022, from  
<https://docs.google.com/document/d/1vr9bJG974iprXFgxz-4c7lNk8PNQ4hWi6jkHkkfVU4I/edit>
- Frank, L., B. (2020). “Free food on campus!”: Using instructional technology to reduce university food waste and student food insecurity. *Journal of American College Health*, 70(7), 1959-1963.  
<https://doi.org/10.1080/07448481.2020.1846042>
- Government of Canada (2020, February 18). *Household food insecurity in Canada: Overview*. Retrieved February 15, 2023, from



<https://www.canada.ca/en/health-canada/services/food-nutrition/food-nutrition-surveillance/health-nutrition-surveys/canadian-community-health-survey-cchs/household-food-insecurity-canada-overview.html>.

Gullion, J. S., & Tilton, A. (2020). *Researching with: A decolonizing approach to community-based action research*. BRILL.

Health Canada. (2007). *Canadian Community Health Survey Cycle 2.2, Nutrition (2004): Income-related household food security in Canada*.

[https://epe.lac-bac.gc.ca/100/200/301/hcan-scan/cdn\\_community\\_health\\_survey-e/H164-42-2007E.pdf](https://epe.lac-bac.gc.ca/100/200/301/hcan-scan/cdn_community_health_survey-e/H164-42-2007E.pdf)

Himmelheber, S. (2016). Relationship depth in community food security: Lessons from a case study of the Campus Kitchens project. *Journal of Public Scholarship in Higher Education*, 6, 77-93. <https://eric.ed.gov/?id=EJ1123810>

Insights West. (2018). 2018 academic experience survey report.

<https://www.dropbox.com/s/a8vu7budsmef74s/AES%20Report%202018.pdf?dl=0>

Kulkarni, A. (2022, October 22). Hundreds walk out of UBC classes to demand university action on food insecurity. CBC. <https://www.cbc.ca/news/canada/british-columbia/ubc-food-security-walkout-1.6626012>

Macklem, Tiff, et al. "Monetary Policy Report." *Bank of Canada*, Government of Canada, Jan. 2023, <https://www.bankofcanada.ca/wp-content/uploads/2023/01/mpr-2023-01-25.pdf>.

Maiter, S., Simich, L., Jacobson, N., & Wise, J. (2008). Reciprocity: An ethic for community-based participatory action research. *Action Research (London, England)*, 6(3), 305-325

<https://doi.org/10.1177/1476750307083720>

Matassa-Fung, Darrian, and Julia Foy. "UBC Student Housing Costs Set to Increase as Much as 8 per Cent." *Global News*, Global News, 29 Jan. 2023,

<https://globalnews.ca/news/9444748/ubc-student-housing-costs-set-to-increase-as-much-as-8-per-cent>

Mulrennan, M. E., Mark, R., & Scott, C. H. (2012). Revamping community-based conservation through participatory research. *The Canadian Geographer*, 56(2), 243-259.

<https://doi.org/10.1111/j.1541-0064.2012.00415.x>

Nair, D., Grzybowska, H., Fu, Y., & Dixit, V. (2018). Scheduling and routing models for food rescue and delivery operations. *Socio-Economic Planning Sciences*, 63, 18–32. doi: 10.1016/j.seps.2017.06.003

Nikkel, L., Maguire, M., Gooch, M., Bucknell, D., LaPlain, D., Dent, B., Whitehead, P., Felfel, A. (2019). *The avoidable crisis of food waste: Roadmap*. Second Harvest and Value Chain Management International.

<https://www.secondharvest.ca/resources/research/the-avoidable-crisis-of-food-waste>

OoNorasak, K., Barr, M., Pennell, M., Hinton, J., Garner, J., Kerber, C., Ritter, C., Dixon, L., Rohde, C., & Stephenson, T. J. (2022). Evaluation of a sustainable student-led initiative on a college campus addressing food waste and food insecurity. *Journal of Agriculture, Food Systems, and Community Development*, 11(4), 223–237.

<https://doi.org/10.5304/jafscd.2022.114.014>

Prost, M. (2022). 21-22 April AMS services council report. UBC Alma Mater Society.

<https://www.ams.ubc.ca/wp-content/uploads/2022/05/473-22-21-22-April-AMS-Services-Council-Report.pdf#page=6>

Richer, L. (2023). Land & Food Systems (LFS) 450: Leadership in Food System Sustainability. Research Foundations & Project Management [PowerPoint]. Canvas

- Skaf, L., Franzese, P. P., Capone, R., & Buonocore, E. (2021). Unfolding hidden environmental impacts of food waste: An assessment for fifteen countries of the world. *Journal of Cleaner Production*, 310, 127523. <https://doi.org/10.1016/j.jclepro.2021.127523>
- Tarasuk, V., Cheng, J., Oliveira, C. D., Dachner, N., Gundersen, C., & Kurdyak, P. (2015). Association between household food insecurity and annual health care costs. *Canadian Medical Association Journal*, 187(14).
- Truong A., Ebert, L., Yu, C., Yoshii, K., & Turk, B. (2021). Promoting campus food security through food recovery: An evaluation of the UBC Food Recovery Pilot Program. UBC Open Collections. [https://open.library.ubc.ca/soa/cIRcle/collections/undergraduateresearch/18861/items/1.0\\_421609](https://open.library.ubc.ca/soa/cIRcle/collections/undergraduateresearch/18861/items/1.0_421609)  
\*Note: year listed for this report (2021) in the UBC database may be incorrect. The report has multiple citations of 2022 sources.
- Tucker, M., F. (2013). Launching a food recovery network. *BioCycle*, 54(1), 35-37. Retrieved April 19 2022, from <https://www.proquest.com/trade-journals/launching-food-recovery-network/docview/1287024769/se-2>
- UBC Campus + Community Planning. (2021) *Climate Action Plan 2030*. [https://planning.ubc.ca/sites/default/files/2021-12/UBCV\\_CAP2030\\_FINAL.pdf](https://planning.ubc.ca/sites/default/files/2021-12/UBCV_CAP2030_FINAL.pdf)
- UBC Sprouts. (2022). *Open letter: UBC must fund food security*. Action Network. <https://actionnetwork.org/petitions/open-letter-ubc-must-fund-food-security>
- University of Arkansas. (n.d.). *What is food recovery?*. University of Arkansas School of Law. <https://law.uark.edu/service-outreach/food-recovery-project/frp-what-is.php>
- Wright, L., Sanchez, A., Jakubec, P., & Ross, J. (2021). Food Fighters: A food recovery-meal delivery program benefits meal recipients, volunteers and agencies. *Journal of Hunger & Environmental Nutrition*, 16(5), 725-737. <https://doi.org/10.1080/19320248.2021.1883496>
- Woo, S., Fong, N., Dhalla, A., & Becker, J. (2020). Alma Mater Society (AMS) Food Recovery. UBC Open Collections. Retrieved from <https://open.library.ubc.ca/media/stream/pdf/18861/1.0392738/2>

## APPENDICES

## APPENDIX A: THEMATIC ANALYSIS SUMMARY OF FINDINGS

*Summary of Findings: Sources of Food Waste*

Code	Total	FG 1	FG 2	FG 3	Notes
Pre-consumer food waste	5	3	2	0	Question 1 was directed around identifying food waste sources
Existing food recovery	9	6		3	
Possible food waste reduction	3	3			
Barriers to food recovery	1	1			
Post consumer food waste	1	1			
Food safety	2	2			
Possible food recovery	4	4		1	
Scheduling	2	2			
Existing food waste reduction	2		2		
Reduce cost to consumer	6	1	2	3	
Enter the waste stream	2	1	1		
Recover for use in outlet	2	1			
Utilize external recovery programs	1	0	1		

*Questions: Sources of Food Waste*

- What are the most common sources of food waste at your food outlet?
  - Can you tell me more about that?
- What, if anything, has already been implemented at your food outlets to...
  - ...reduce food waste?
  - ...promote food security?

## Summary of Findings: Imagining a Food Recovery Program

Code	Total	FG 1	FG 2	FG 3	Notes
<b>Communicating</b> <ul style="list-style-type: none"> <li>• Single point of contact</li> <li>• Communication system</li> </ul>	<b>11</b> <ul style="list-style-type: none"> <li>• 5</li> <li>• 6</li> </ul>	6 <ul style="list-style-type: none"> <li>• 3</li> <li>• 3</li> </ul>	5 <ul style="list-style-type: none"> <li>• 2</li> <li>• 3</li> </ul>	6 <ul style="list-style-type: none"> <li>1</li> <li>5</li> </ul>	
<b>Facilities</b> <ul style="list-style-type: none"> <li>• Storage/space</li> <li>• Maintenance</li> <li>• Temperature</li> <li>• Blast Chiller</li> </ul>	<b>11</b> <ul style="list-style-type: none"> <li>• 6</li> <li>• 2</li> <li>• 1</li> <li>• 2</li> </ul>	3 <ul style="list-style-type: none"> <li>• 2</li> <li>• 0</li> <li>• 0</li> <li>• 1</li> </ul>	8 <ul style="list-style-type: none"> <li>• 4</li> <li>• 2</li> <li>• 1</li> <li>• 1</li> </ul>	7 <ul style="list-style-type: none"> <li>4</li> <li>1</li> <li>2</li> <li>0</li> </ul>	
<b>Outlet Capacity</b> <ul style="list-style-type: none"> <li>• Staffing</li> <li>• Available food</li> <li>• Cost</li> </ul>	<b>10</b> <ul style="list-style-type: none"> <li>• 7</li> <li>• 1</li> <li>• 1</li> </ul>	4 <ul style="list-style-type: none"> <li>• 4</li> <li>• 0</li> <li>• 0</li> </ul>	6 <ul style="list-style-type: none"> <li>• 3</li> <li>• 1</li> <li>• 1</li> </ul>	25 <ul style="list-style-type: none"> <li>8</li> <li>14</li> <li>3</li> </ul>	
<b>Food Safety</b> <ul style="list-style-type: none"> <li>• Perishability</li> </ul>	<b>9</b> <ul style="list-style-type: none"> <li>• 2</li> </ul>	1 <ul style="list-style-type: none"> <li>• 0</li> </ul>	8 <ul style="list-style-type: none"> <li>• 2</li> </ul>	2 <ul style="list-style-type: none"> <li>2</li> </ul>	
<b>Scheduling</b> <ul style="list-style-type: none"> <li>• Closing times</li> <li>• Variation</li> <li>• Timeliness</li> <li>• Consistency</li> </ul>	<b>8</b> <ul style="list-style-type: none"> <li>• 2</li> <li>• 2</li> <li>• 1</li> <li>• 2</li> </ul>	4 <ul style="list-style-type: none"> <li>• 0</li> <li>• 1</li> <li>• 0</li> <li>• 1</li> </ul>	4 <ul style="list-style-type: none"> <li>• 2</li> <li>• 1</li> <li>• 1</li> <li>• 1</li> </ul>	8 <ul style="list-style-type: none"> <li>0</li> <li>1</li> <li>2</li> <li>4</li> </ul>	
<b>Seasonal Variation</b> <ul style="list-style-type: none"> <li>• School breaks</li> <li>• COVID trends</li> <li>• Running out</li> </ul>	<b>7</b> <ul style="list-style-type: none"> <li>• 4</li> <li>• 1</li> <li>• 1</li> </ul>	x	7 <ul style="list-style-type: none"> <li>• 4</li> <li>• 1</li> <li>• 1</li> </ul>	6 <ul style="list-style-type: none"> <li>4</li> <li>2</li> <li>0</li> </ul>	
<b>Existing Food Recovery</b>	<b>4</b>	x	3	8	
<b>Financial resources</b> <ul style="list-style-type: none"> <li>• Maintenance costs</li> <li>• Cost efficiency</li> </ul>	<b>2</b> <ul style="list-style-type: none"> <li>• 1</li> <li>• 1</li> </ul>	2 <ul style="list-style-type: none"> <li>• 1</li> <li>• 1</li> </ul>	x	0	
<b>Proximity</b>	<b>1</b>	1	x	1	
<b>Student Spending Patterns</b>	<b>1</b>	1	x	2	<b>Important despite one mention</b>
<b>Advocacy</b> <ul style="list-style-type: none"> <li>• On expanding facilities &amp; converting space</li> </ul>	<b>1</b>	x	x	1	<b>Important despite one mention</b>

## Questions: Imagining a Food Recovery Program

- Week by week, what would a successful food recovery program look like to you?

- What resources can you offer to support food recovery?

- [Anonymous Writing Activity]

If you were to participate in this food recovery program, thinking about the average week at work, what logistical barriers and challenges do you anticipate?

- [Going through each response]

Does this concern apply to your outlet?

What kind of support would be most useful for your food outlet to overcome these challenges?

## Summary of Findings: Interest &amp; Recommendations

Category	Total	Notes
<b>Communicating</b> <ul style="list-style-type: none"> <li>Single point of contact</li> <li>Communication system</li> </ul>	6 1 5	
<b>Facilities</b> <ul style="list-style-type: none"> <li>Storage/space</li> <li>Maintenance</li> <li>Temperature</li> <li>Blast Chiller</li> </ul>	7 4 1 2 0	
<b>Outlet Capacity</b> <ul style="list-style-type: none"> <li>Staffing</li> <li>Available food</li> <li>Cost</li> </ul>	25 8 14 3	
<b>Food Safety</b> <ul style="list-style-type: none"> <li>Perishability</li> </ul>	2 2	
<b>Scheduling</b> <ul style="list-style-type: none"> <li>Closing times</li> <li>Variation</li> <li>Timeliness</li> <li>Consistency</li> </ul>	8 0 1 2 4	
<b>Seasonal Variation</b> <ul style="list-style-type: none"> <li>School breaks</li> <li>COVID trends</li> <li>Running out</li> </ul>	6 4 2 0	
Existing Food Recovery	8	
<b>Financial resources</b> <ul style="list-style-type: none"> <li>Maintenance costs</li> <li>Cost efficiency</li> </ul>	0	
Proximity	1	
<b>Student Spending Patterns</b>	2	
<b>Advocacy</b>	1	

## Questions: Interest &amp; Recommendations

- As of now, how would you describe your current interest toward this?
  - What would be a non-negotiable for a food recovery program to work for your food outlet?
  - What would make a food recovery program more appealing for your food outlet?
- Are there any general recommendations for the research team and/or the AMS Food Bank?
  - What should the researchers know when they go about making the plan?

APPENDIX B: INTERVIEW AND FOCUS GROUP QUESTIONS

Client Semi-structured interview 1 (pre-planning process)

Outcomes	Goals
(1) Collaboratively developing determinants & markers of research success	(1) Frame the research focus in alignment with the AMS Food Banks’ intentions and goals
(2) Collaboratively developing the research questions and structure of the focus group sessions	(2) Provide decision-making power to the AMS Food Bank in fostering relationship-building during the focus groups.

**Core Questions**

*On the Overall Project*

- In April, how will we know that this research project was successful?
  - What about beyond April?
- Right now, do you foresee anything that may pose a larger barrier or obstacle to the completion of this project?

*On the Focus Group Structuring*

- Are the written goals for the focus groups aligned with your ideal outcomes?
  - Could there be anything added, removed, or changed to fit this best?
- Which parts of the focus group help and hinder relationship-building with the food outlets?

*On the Questions*

- What should be removed or added from the research questions?
  - Which questions could be more clear or engaging?
  - Which questions best and least serve our goals?

Focus group 1 (peri-planning process)

Outcomes	Goals
(1) Identifying common sources of food waste and food loss within each food outlet	(1) Building relationships of reciprocity (CBAR ethics in knowledge sharing per Maiter et al., 2008)
(2) Gauging individual stakeholder interest, resources, & capacity	(2) Assessing opportunities and parameters for food recovery partnerships with the AMS Food Bank
(3) Outlining the community stakeholders' collective conditions for commitment and participation	(3) Compiling logistical barriers and opportunities toward building a food recovery network.
(4) Collaboratively brainstorming a vision & possible markers of a successful food recovery program.	

**Icebreakers**

- Self introduction
  - Name, pronouns
- What is your favourite scent (at the food outlet)?

**Sources of Food Waste**

- What are the most common sources of food waste at your food outlet?
  - Can you tell me more about that?
- What, if anything, has already been implemented at your food outlets to...
  - ...reduce food waste?
  - ...promote food security?

**Imagining a Food Recovery Program**

- Week by week, what would a successful food recovery program look like to you?
  - What resources can you offer to support food recovery?
- [Anonymous Writing Activity]
 

If you were to participate in this food recovery program, thinking about the average week at work, what logistical barriers and challenges do you anticipate?

  - [Going through each response]
 

Does this concern apply to your outlet?

What kind of support would be most useful for your food outlet to overcome these challenges?

**Interest, Capacity, Resources**

- As of now, how would you describe your current interest toward this?



- What would be a non-negotiable for a food recovery program to work for your food outlet?
- What would make a food recovery program more appealing for your food outlet?

***Recommendations for Researchers***

- Are there any general recommendations for the research team and/or the AMS Food Bank?
  - What should the researchers know when they go about making the plan?

## Focus group 2 (peri-planning process)\*

During the second round of focus groups, results and the draft FWRRP will be shared to AMS Nest food outlet representatives, who will be prompted to engage in honest feedback and reflective data analysis.

\*Please note that this focus group was not held and that these questions represent an approved draft. The second focus group was changed to an online survey at the discretion of the research team and the project client. The section following this one outlines the online survey questions.

Outcomes	Goals
(1) Furthering inter-stakeholder relationships	(1) Ensuring that data analysis and interpretation is accurate to the stakeholders' intentions
(2) Collecting stakeholder feedback on the proposed FWRRP (in terms of feasibility and efficacy) and the data interpretation (in terms of accuracy)	(2) Assessing the feasibility, barriers, and limitations to the proposed FWRRP
(3) Updating the research team on stakeholder interest, resources, & capacity given the proposed FWRRP.	(3) Outlining needed changes to improve the FWRRP's feasibility & efficacy.

### Icebreakers

- Tell me about your prior connections with the AMS Nest Food Bank, if any.

### **Draft FWRRP Feedback**

- [Anonymous feedback activity for the draft FWRRP]  
[Food outlets do this anonymously on paper, where it is read aloud and discussed together]

### **Possible Draft FWRRP Feedback Prompts**

- What about the draft plan do you think would be the most challenging to execute?
  - Optional: Are there any strengths in this plan, logistically?
- What makes it feasible or infeasible for your food outlet to participate?
  - Optional: Are there any ways to remove these barriers?

### **On Reflexive Data Analysis**

- [Agree-disagree activity]  
[Stand on either side of the room to agree or disagree with the statements in the draft plan]
  - Can you tell us a bit about why you're standing on this side of the room?

### **Recommendations for Researchers**

- Are there any general recommendations for the research team and/or the AMS Food Bank?
  - What should the researchers know when they go about making the plan?

## Survey 2 (peri-planning process, in lieu of focus group 2)

This survey was disseminated in lieu of hosting a second round of focus groups.

Outcomes	Goals
(4) Furthering inter-stakeholder relationships	(4) Ensuring that data analysis and interpretation is accurate to the stakeholders' intentions
(5) Collecting stakeholder feedback on the proposed FWRRP (in terms of feasibility and efficacy) and the data interpretation (in terms of accuracy)	(5) Assessing the feasibility, barriers, and limitations to the proposed FWRRP
(6) Updating the research team on stakeholder interest, resources, & capacity given the proposed FWRRP.	(6) Outlining needed changes to improve the FWRRP's feasibility & efficacy.

### **Stakeholder Feedback**

- [Short answer] Does the proposed actions of the FWRRP align with your ideal outcomes? Could there be anything added, removed, or changed to fit this best?

### **Feasibility & Efficacy**

- [Short answer] Do you foresee anything that may pose a larger barrier or obstacle to the completion of this project?

### **Data Analysis**

- [Short answer] Do the research findings (Appendix A) accurately represent your experiences as an AMS Food Outlet manager? What should be changed?

### **Markers of Success**

- [Short answer] What are some markers of success beyond April 2024?

### **Other**

- [Short answer] Any additional feedback or comments?

## Client Semi-structured interview 2 (post-planning process)

<b>Outcomes</b>
(1) Finalize the completed FWRRP document
(2) Ensure that data collection was conducted and interpreted fairly
(3) Collect information on necessary edits
(4) Ensure that the plan remains within the scope and goals of the AMS Food Bank

### ***Finalizing the FWRRP***

- Is the plan within the scope and goals of the AMS Food Bank?
- What considerations remain unaddressed in the FWRRP?
- What can be changed at this stage to ensure the feasibility & efficacy of the project?

### ***Data Interpretation***

- Is the interpretation of the data fair and representative?

### ***Overall Feedback***

- Were there any unexpected changes
- What are your thoughts on the entire process?
  - What should future SEEDS project researchers know?

APPENDIX C: SAMPLE FOCUS GROUP SCRIPT

**Date:** [redacted]

**Facilitating:** [redacted]

**Note Taking:** [redacted]

**Set-up - 2:45pm**

- Printed COVID safety and consent forms and pens
- Blank paper and pens, box
- Set up masks and sanitizer
- Set up slides
- Set up food

**Welcome - 3:00pm**

- **Thank participants** for their participation in the focus group
- Briefly remind participants about **Focus:**  
**Food Insecurity and Food Waste Mitigation**
- Roadmap of what we will be doing over the next hour
  - Project introduction (10 minutes)
  - 6 core questions (30 minutes)
  - Closing
- **Introduce team**, participants introduce themselves (name/pronouns)
- Confirm that **consent forms** and **COVID safety checks** have been done, if not participants can fill out copies now.
- Data collection recording protocols: Data **security, anonymity, confidentiality**
  - Eliminating **personally identifying info**
  - Unattributable **quotes**
  - Recordings only **accessible** to researchers
- **Questions?**
  - **Ask to record. Record.**

**Project Introduction** - 3:10 pm

- Presentation Slides: Purpose and context
  - *AMS Food Bank*
  - *Definitions*
  - *Food Waste: Why Does it Matter?*
  - *AMS Food Bank Priorities*
    - Our proposed research will explore the possibility of creating a program to **redirect excess food (or food waste)** at the food outlets to the AMS Food Bank instead of the landfill.
    - We plan to create a **Food Waste Reduction and Recovery Plan (FWRRP)** - a detailed, step-by-step plan outlining how this food recovery process will work.
    - The two main benefits of food recovery are that it reduces **food waste** and can help to reduce **food insecurity**
      - These are especially important because of the skyrocketed demand for the AMS Food Bank since the pandemic, as well as in supporting emission reduction targets outlined in the UBC Climate Action Plan and ASAP
  - *Today's Focus Group*
  - *Your Input*
    - Why you were selected
      - With your experience managing Nest food outlet(s), you have **valuable knowledge** about the feasibility of food recovery in the Nest, and what **Nest food outlets needs and priorities** are in regards to this potential program.
    - What this research will be used for
      - Information from this interview will be used to create a first draft for the FWRRP
      - After drafting the FWRRP we will follow up with you with the opportunity to give us further feedback via a qualtrics form
  - *Working Together*
- **Questions?**
  - *Introductions*
- Review **names**. **Icebreaker** question: What's your **favourite smell** at the Nest?

**Core Questions - 3:20 pm**

**Sources of Food Waste**

1. What are the most **common sources of food waste** at your food outlet?
  - a. Can you tell me more about that?
  
2. What, if anything, has already been **implemented** at your food outlets to...
  - a. ...reduce **food waste**?
  - b. ...promote **food security**?
  - c. (What has been successful? What are some things that will be continued?)

**Imagining a Food Recovery Program**

3. Week by week, what would a **successful** food recovery program look like to you?
  - a. What **resources** can you offer to support food recovery?

4. [**Anonymous** Writing Activity]

If you were to participate in this food recovery program, thinking about the average week at work, what logistical **barriers and challenges** do you anticipate?

- a. [Going through each input]

Does this concern **apply** to your outlet?

What kind of **support** would be most useful for your food outlet to overcome these challenges?

**Interest, Capacity, Resources**

5. As of now, how would you describe your current interest toward this?
  - a. What would be a non-negotiable for a food recovery program to work for your food outlet?
  - b. What would make a food recovery program more appealing for your food outlet?

**Recommendations for Researchers**

6. Are there any general recommendations for the research team and/or the AMS Food Bank?
  - a. What should the researchers know when they go about making the plan?

**Closing - 3:50 PM**

- **Questions, anything to add?**
- Go over the **next steps** (qualtrics form for feedback on the plan, if they want us to send them more information about our project, etc.)
- How they can **contact us**

- **Thank everyone** for coming
- Provide info on **incentives**. Give them gift cards?
  - Or state that they will be sent to them later?

**Clean-up - 4:00 PM**

- Clean up food
- Ensure we have all notes/recordings
- Someone will take home leftover masks, sanitizer, and printed forms, for the next focus group

**Post Focus Group**

- Send follow-up email to thank participants, and recap what they can expect next



## APPENDIX D: SUMMARY OF DISCUSSION THEMES

Challenge	Effect	Outcome
<b>1. Continuity</b>		
Participants noted that past attempts at similar programs at UBC have at times been short-lived, or stopped without notice, due to inconsistent volunteer capacity, funding, and resources.	<p>An effective food recovery program would take steps to ensure its long-term continuity of operations.</p> <p>This would support building trust, transparency, communication, and consistency.</p>	Suggestions include ensuring the ongoing presence of paid personnel and consistent funding & resources for the program.
<b>2. Accommodating Variations</b>		
There are diverse needs between AMS Nest food outlets. The size of each outlet and type of food served influences if and when its daily operations regularly produces food waste.	Participants noted that a good food recovery program accommodates each outlets' varying characteristics, ensuring that food waste can be picked up in a food-safe manner.	<p><b>Scheduling preferences</b> for food waste pickup</p> <ul style="list-style-type: none"> <li>Variations in ideal weekly scheduling. For example, many preferred Friday evening pickup times due to weekend closures.</li> <li>Seasonal variation in food waste. More food waste recovery is possible right before breaks in the university's scheduling.</li> </ul> <p><b>Perishability</b> of food waste</p> <ul style="list-style-type: none"> <li>Day-of perishables versus end-of-week perishable foods required varying pickup schedules and logistics</li> <li>Participants highlighted that appropriate storage should be used and adjusted based on food waste perishability.</li> </ul> <p><b>Scale</b> of food waste production</p> <ul style="list-style-type: none"> <li>Regularly scheduled pickups for larger outlets</li> <li>Case-by-case communication for smaller outlets</li> </ul>
<b>3. Single Point of Contact</b>		
Participants cited challenges managing multiple connections to third parties, particularly communication issues and concerns about adhering to food-safe practices..	Participants noted that only managing one point of contact would simplify and streamline the process of food recovery pickup for outlets, and ensure that food safety practices are properly adhered to.	Having a single food safety-trained food recovery personnel as a point of contact and pickup would resolve confusion around communication, which in turn would build effective trust and efficiency between the food recovery program and food outlets.
<b>4. Working Within Outlet Capacity</b>		
Participants unanimously highlighted that their food outlets are at maximum capacity in terms of time, personnel, resources, and finances.	Working within outlet capacity will ensure that food recovery does not come at the expense of the food outlets' own operations.	Structuring the food recovery program to minimize additional or diverted time for staff at participating food outlets will support sustained participation in the food recovery program.
<b>5. Expanding and working within AMS Nest resources and facilities</b>		
Participants described insufficient space in food-safe storage facilities as a limiting factor in food recovery. Existing	Access to appropriate food storage facilities will expand the quantity and range of recoverable food waste for	Explore opportunities for equipment, space, and facilities. Advocating for space, funding, and resources towards

infrastructure (e.g. a blast freezer) is no longer usable in the AMS Nest.	the AMS Food Bank.	this program will be essential to support this.
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APPENDIX E: FOOD WASTE RECOVERY AND REDUCTION PLAN

The following pages include the Food Waste Recovery and Reduction Plan in full.



# **AMS NEST FOOD WASTE REDUCTION AND RECOVERY PLAN**

An Action Plan for the AMS Food Bank  
and AMS Nest Food Outlets

April 21, 2023

An LFS 450 project in partnership with the Social Ecological Economic Development Studies (SEEDS) Sustainability Program at the University of British Columbia

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Disclaimer: UBC SEEDS Sustainability Program provides students with the opportunity to share the findings of their studies, as well as their opinions, conclusions and recommendations with the UBC community. The reader should bear in mind that this is a student research project and is not an official document of UBC. Furthermore, readers should bear in mind that these reports may not reflect the current status of activities at UBC. We urge you to contact the research persons mentioned in a report or the SEEDS Sustainability Program representative about the current status of the subject matter of a report.

# Context

## UBC Food System Diagram

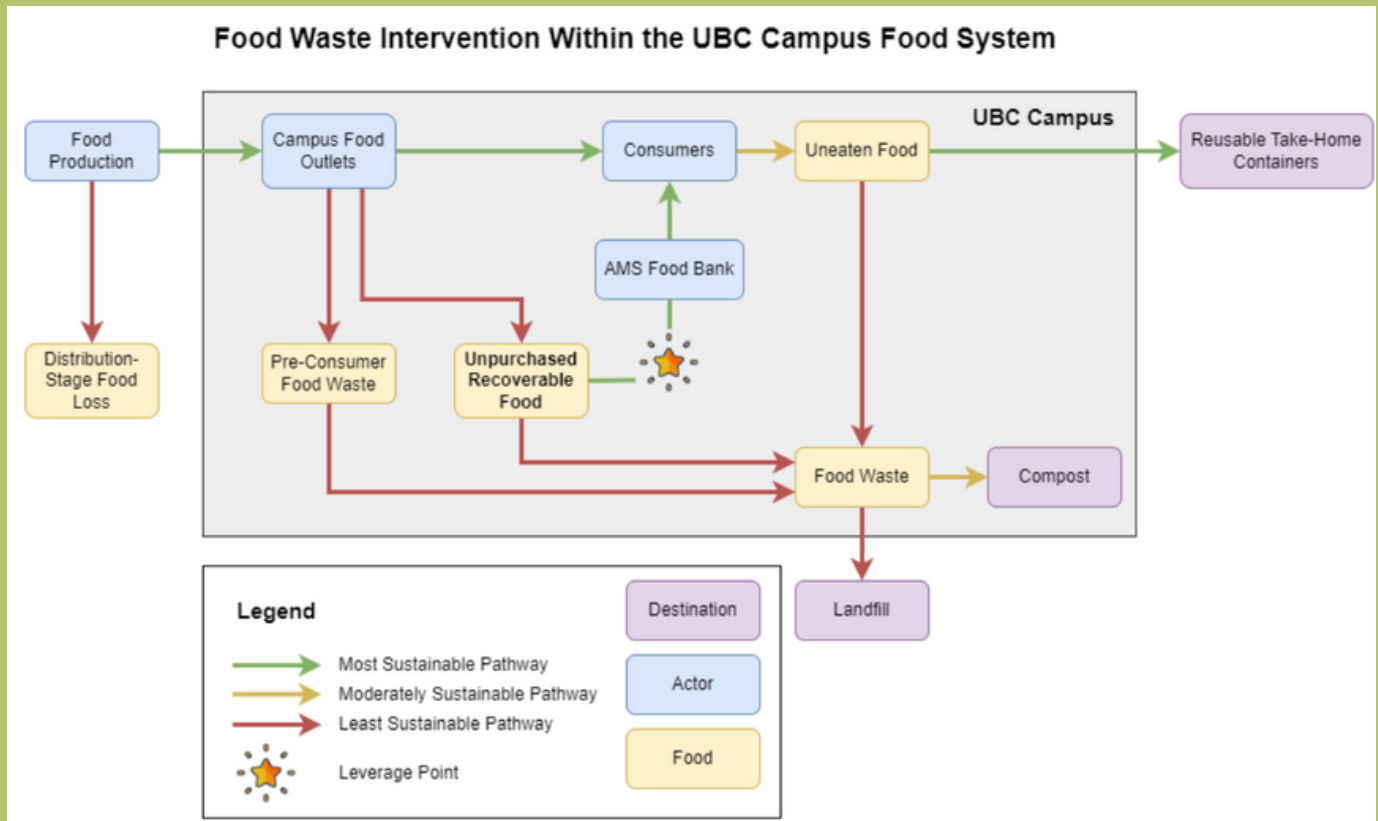


Figure 1: Food Waste Intervention Within the UBC Campus Food System (UBC Food System Diagram)

This UBC food systems diagram shows the path that food waste takes. The red arrows indicate where food goes to waste, which occurs at the following stages of the food system:

- Food loss at distribution stage (off-campus)
- Pre-consumer food waste (on-campus)
- Unpurchased recoverable food
- Post-consumer food waste
- Landfill

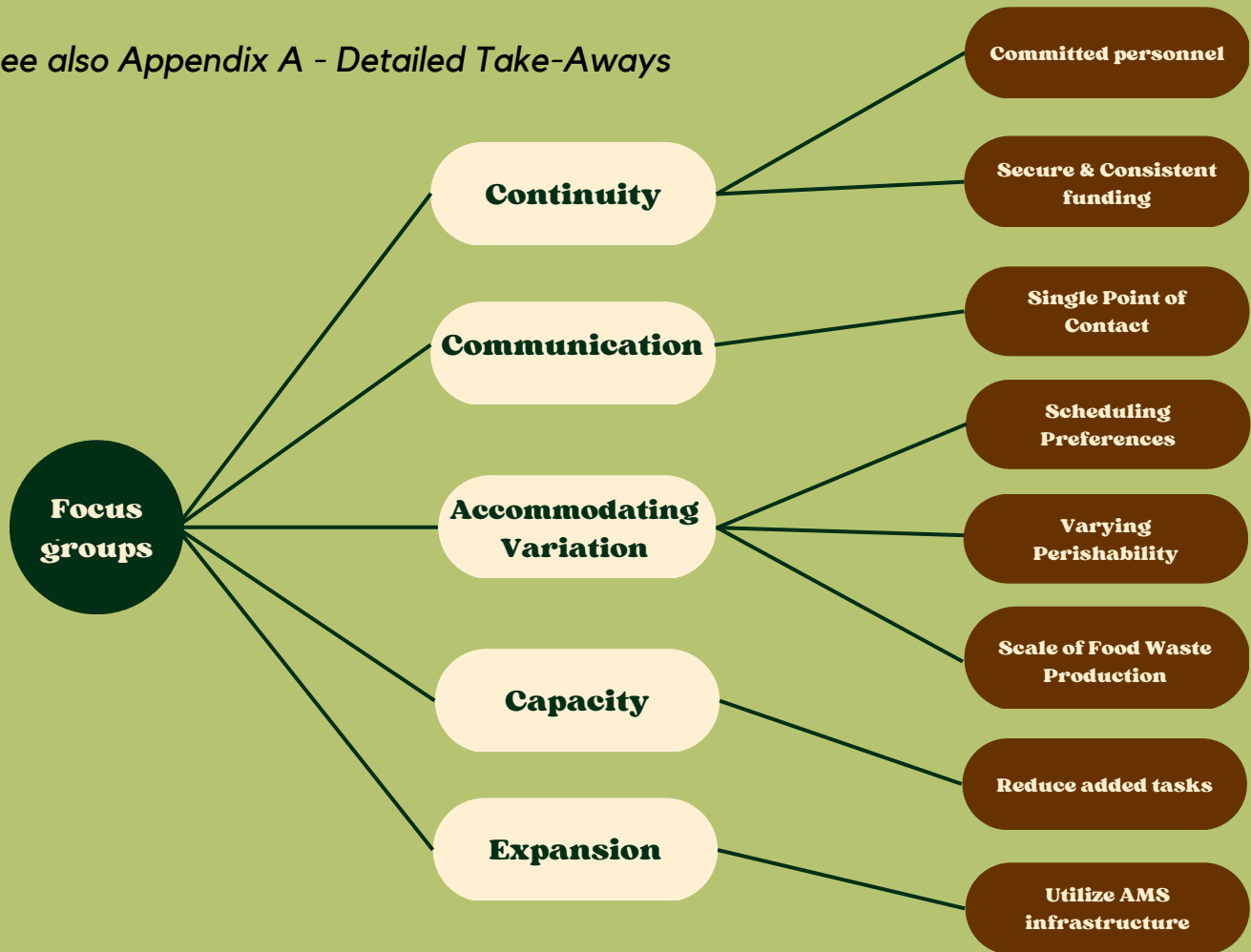
A number of approaches have been taken which target food waste at each of these steps. This proposed food recovery program targets **unpurchased recoverable food** from AMS Nest food outlets. Instead of heading to the landfill, this plan intervenes by redirecting food waste back to consumers. This leverage point is marked on the diagram with a star.

# Research Findings: Overview

Our primary results show that, for food recovery program implementation, participants value:

1. Continuity
2. Communication
3. Accommodating Variation
4. Working Within Capacity
5. Effective Use of AMS Nest Facilities and Resources

See also Appendix A - Detailed Take-Aways



## Challenges

- Limited food safe cold storage space for perishable items
- Food bank hours of operation: food that is perishable would need to be distributed in the same day, but pick up is limited to Mondays or Thursdays
- Additional containers needed to package donations
- Communication with Food Recoverer will need to be direct to accommodate for short-notice donation pick ups

# Food Recovery

## How Does it Work?

### 1. Feeding customers

- Food outlets sell food to customers which goes into their tummies
- Customers redirect uneaten food into the waste stream as compost or garbage



### 2. Food nearing sell-by date

- Food outlets decide which food is nearing end of sellable period, and hold them in food-safe conditions for redirection to the AMS Food Bank
- This excess perishable food will be collected during the next business day by the AMS Food



### 3. End-of-Day Leftovers

- Food outlets sell stored excess vendable food during the following business day(s)
- Food outlets sell day-old food at a reduced rate to reduce waste. Excess food enters the waste stream as compost.



### 4. Preparing for Donation

- Food safe trained staff package unsold food from hot trays, ingredients, etc. into containers
- Excess food intended for donation are collected in a bin and placed in an outlet donation zone of their choosing



### 5. Food Recovery Hand-Off

- Food bank coordinator arrives at each outlet at the scheduled time
- Food is transferred to safe storage
- Food Bank distributes food to patrons





# Program Plan

## Short Term: Pilot

This proposed pilot plan would take place over the course of the Winter 2023-2024 academic terms, from September 2023 to April 2024.

This project will require the coordination of various AMS community members, such as:

- AMS Nest Food Outlet Managers & Staff
- AMS Sustainable Food Systems Coordinator
- AMS Food Bank Coordinator
- AMS Executives

Coordination and implementation will generally be led by the assigned single point of contact, the AMS Food Bank Coordinator. The AMS Sustainable Food Systems Coordinator will lead by

## Timeline

### *Term 1: September-December 2023*

Coordination	Evaluation Planning
The food recovery primary point of contact (the AMS Food Bank Coordinator) meets with interested AMS Nest food outlet managers to coordinate food recovery logistics (i.e. food pickup scheduling), taking research findings into account. The planned pilot is set to begin in January 2024.	The primary point of contact applies for a term 2 SEEDS project to evaluate the pilot, preferably through the course LFS 450.

### *Term 2: January-April 2024*

Pilot Implementation	Evaluation
The primary point of contact and interested AMS Nest food outlet conduct a food recovery pilot.	A student research team conducts an evaluation of the pilot's effectiveness and challenges, through the UBC SEEDS Sustainability Program. Deliverables will be used to suggest improvements in implementation and points for advocacy.

## Recommendations & Considerations

Single Point of Contact	Advocacy
<p><b>AMS Food Bank Coordinator</b> This plan will require a single point of contact to implement and conduct this food recovery pilot. A paid position, such as the AMS Food Bank Coordinator, is most suited to this role.</p>	<p><b>AMS Sustainable Food Systems Coordinator</b> Research suggests that insufficient facilities, funding, and resources as a primary limiting factor preventing effective food redistribution. Advocacy to secure consistently sufficient facilities, funding, and resources for food recovery supports sustainability and food security. Identifying this program’s effectiveness, strengths, and opportunities is in tandem with the ongoing goal of advocacy, which will be led by the AMS Sustainable Food Systems Coordinator.</p>

## Long Term: Implementation

These long-term recommendations are planned for after the implementation stage in April 2024.

### Goals

- Ensure the **continuity** of the food recovery program.
- Enhance **food security** through surplus food redistribution
- Promote a robust **circular economy** through food recovery programs.
- Tailor the program’s **operational model** to the UBC community.

## Recommendations & Considerations

Integrate	Advocate	Expand
<p>Integrate the role of single point of contact within the responsibilities of the AMS Food Bank Coordinator.</p> <p>Integrate the food recovery program within AMS funding structures. Allocate permanent sources of funding for a paid role.</p>	<p>The AMS Sustainable Food Systems Coordinator advocates for funding, facilities, space, and resources toward Food Bank Storage. For example, through the Sustainable Food Systems Project Fund. AMS-internal advocacy will be led by the AMS Sustainable Food Systems Coordinator.</p>	<p>Expand the food recovery into the UBC Conferences &amp; Catering and beyond, should the program be successful.</p>

# Conclusion

This Food Waste Reduction and Recovery Plan (FWRRP) outlines actionable steps toward enhancing food recovery within the AMS Nest. Based on primary research with clients, partners, and stakeholders, this plan is relevant to all involved in the AMS Nest food system, from AMS food outlet managers, AMS executives and staff, to UBC students.

The FWRRP provides a long and short-term operational framework to implement a food recovery program within the AMS Nest. Oriented at incoming AMS Food Bank Coordinators and AMS Sustainable Food Systems Coordinators, food collection will be supported by a regular collection schedule through a centralized point of contact. Other recommendations include advocacy for increased funding and resources, as well as further SEEDS Sustainability Program research.

Food recovery programs will be key in the creation of a robust circular economy within UBC's evolving context of intensified climate change and rising food insecurity. Both AMS food outlets and AMS staff alike are strongly encouraged to participate in the implementation of this plan, towards goals 1.12, 1.13, 1.14, and 1.15 (Based on U.N. SDG #12: Ensure sustainable consumption and production patterns) of the AMS Sustainable Action Plan (ASAP).

# Appendix A:

## Detailed Take-Aways

Challenge	Effect	Outcome
<b>1. Continuity</b>		
Participants noted that past attempts at similar programs at UBC have at times been short-lived, or stopped without notice, due to inconsistent volunteer capacity, funding, and resources.	<p>An effective food recovery program would take steps to ensure its long-term continuity of operations.</p> <p>This would support building trust, transparency, communication, and consistency.</p>	Suggestions include ensuring the ongoing presence of paid personnel and consistent funding & resources for the program.
<b>2. Accommodating Variations</b>		
There are diverse needs between AMS Nest food outlets. The size of each outlet and type of food served influences if and when its daily operations regularly produces food waste.	Participants noted that a good food recovery program accommodates each outlets' varying characteristics, ensuring that food waste can be picked up in a food-safe manner.	<p><b>Scheduling preferences</b> for food waste pickup</p> <ul style="list-style-type: none"> <li>• Variations in ideal weekly scheduling. For example, many preferred Friday evening pickup times due to weekend closures.</li> <li>• Seasonal variation in food waste. More food waste recovery is possible right before breaks in the university's scheduling.</li> </ul> <p><b>Perishability</b> of food waste</p> <ul style="list-style-type: none"> <li>• Day-of perishables versus end-of-week perishable foods required varying pickup schedules and logistics</li> <li>• Participants highlighted that appropriate storage should be used and adjusted based on food waste perishability.</li> </ul> <p><b>Scale</b> of food waste production</p> <ul style="list-style-type: none"> <li>• Regularly scheduled pickups for larger outlets</li> <li>• Case-by-case communication for smaller outlets</li> </ul>

<b>3. Single Point of Contact</b>		
<p>Participants cited challenges managing multiple connections to third parties, particularly communication issues and concerns about adhering to food-safe practices.</p>	<p>Participants noted that only managing one point of contact would simplify and streamline the process of food recovery pickup for outlets, and ensure that food safety practices are properly adhered to.</p>	<p>Having a single food safety-trained food recovery personnel as a point of contact and pickup would resolve confusion around communication, which in turn would build effective trust and efficiency between the food recovery program and food outlets.</p>
<b>4. Working Within Outlet Capacity</b>		
<p>Participants unanimously highlighted that their food outlets are at maximum capacity in terms of time, personnel, resources, and finances.</p>	<p>Working within outlet capacity will ensure that food recovery does not come at the expense of the food outlets' own operations.</p>	<p>Structuring the food recovery program to minimize additional or diverted time for staff at participating food outlets will support sustained participation in the food recovery program.</p>
<b>5. Expanding or Working Within AMS Resources and Facilities</b>		
<p>Participants described insufficient space in food-safe storage facilities as a limiting factor in food recovery. Existing infrastructure (e.g. a blast freezer) is no longer usable in the AMS Nest.</p>	<p>Access to appropriate food storage facilities will expand the quantity and range of recoverable food waste for the AMS Food Bank.</p>	<p>Explore opportunities for equipment, space, and facilities. Advocating for space, funding, and resources towards this program will be essential to support this.</p>