UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program
Student Research Report

UBC Food Vision and Values: Phase 1

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Executive Summary

UBC Food Services play a role in mitigating food insecurity while promoting social, economic, and environmental sustainability through their newly established Food Vision and Values. However, they currently have no way of tracking how well their operations align with their vision and values. Our research goals were to 1) help develop a dynamic auditing tool in the form of a spreadsheet to measure how well operations align with the Food Vision and Values and 2) conduct 2 in-person audits to provide baseline data for populating the spreadsheet. We chose to do the audits on the Vegan & Vegetarian Options at UBC's Open Kitchen dining hall and Free Drinking Water values at 33 UBC Food Services locations based on stakeholder priority and group availability. The forms used in both audits derived from their respective sheets as part of our auditing spreadsheet. The Free Drinking Water audit was conducted by dividing the UBCFS locations according to geographical distribution and having each group member audit all the locations in one section. The Vegan & Vegetarian Options were audited as a group by going to each station at Open Kitchen to note the available menu offerings at the time. Less than half of the audited UBCFS locations had a water station and the ratio of stations with signage, compared to without signage, is 7:8. Our audit results show that there were 4 food locations that did not meet the UBCFS standard to provide access to free drinking water. Out of the 42 entrées at Open Kitchen, 43% were categorized as vegetarian, while 17% were vegan, and 14% incorporated plant based proteins. Main recommendations to UBC Food Services to help improve their operations include: 1) inform the presence of FDW either through increased signage, menu display or directions to water stations, 2) increase the number of Vegan/Vegetarian entrée offerings and 3) inform the presence of such offerings using appropriate signage.

1. Introduction

1.1 Research Topic

Food Vision and Values (FVV) is a set of ambitious priorities developed by UBC Food Services (UBCFS) in 2017. It is made up of 15 components listed as follows: Quality & Nutrition, Affordable Healthy Options, Food Skills & Knowledge, Vegan & Vegetarian Options, Nutrition, Ingredient & Allergen Labelling, Fair Trade, Ocean Wise, Zero Waste, Free Drinking Water (FDW), Seasonal & Local Foods, Global & Cultural Foods, In-House Preparation, Supplier Code of Conduct, Food Safety, as well as UBC Action Framework (Appendix A) (Responsibility n.p.). As UBCFS currently provides the majority of food on UBC's Vancouver campus and aims to have a positive impact on the community, implementation of the FVV helps 1) align priorities between various stakeholders across and off campus, 2) ensure that quality and safety are achieved as a food service establishment, 3) support health and wellbeing of students, staff, faculty and the neighbouring community and 4) reflect UBC's vision and position in addressing issues revolving around environmental, social and economic sustainability (Speight n.p.). Launching the FVV also reflects the desire of UBCFS to become a leader in best practices in the industry (Speight n.p.).

With the introduction of the FVV, there is a need to investigate how well UBCFS is applying the principles listed in their values. Currently, there is no set of metrics in place to accurately and appropriately evaluate the progress made by UBCFS. Quantifiable indicators are needed to conclude whether UBCFS is currently an industry leader in best practices and sustainability initiatives, as well as to inform future areas for improvement. This project presented an opportunity to support the development of a tool to quantify the progress of UBCFS

in terms of how well it met the FVV. As a form of audit, this tool was intended to help verify whether claims made by UBCFS are indeed fulfilled, and monitor future progress. As well, a literature review was required to inform UBCFS of its strengths and opportunities, as well as recommendations for future improvements.

1.2 Relevance to sustainability

As part of UBC's vision to advance sustainability, which is defined as "simultaneous improvements in human and environmental wellbeing, not just reductions in damage or harm", the 20-Year Sustainability Strategy states that "By 2035, such regenerative sustainability is embedded across the University throughout teaching, learning, research, partnerships, operations and infrastructure, and the UBC community" (20 Year Sustainability Strategy 1). One way which UBC has incorporated this vision into its operations is through the creation of the FVV, which encompasses all 3 pillars of sustainability. In terms of environmental sustainability, values such as Vegan and Vegetarian (V&V) Options as well as Seasonal & Local Foods emphasize sustainable ingredient sourcing practices that reduce greenhouse gas emissions as a way to mitigate climate change (UBC Action Framework n.p.). Specifically, UBCFS intends to make V&V offerings readily available, as well to source at least 60% of the ingredients used from within a 400-km radius (Responsibility n.p.). As well, Ocean Wise ensures that seafood is sourced from non-endangered species using sustainable fishing practices (Sustainable Food Initiatives n.p.). The Zero Waste value is represented by the Zero Waste Action Plan, which involves campus and community stakeholders in supporting recycling and waste diversion programs (Waste Action Plan n.p.). In terms of social sustainability, Fair Trade promotes the production foods that help farmers improve their living standards and farming practices (Fairtrade and Sustainability n.p.). Food Skills & Knowledge and Global & Cultural Foods are

associated with the social aspects of sustainability in providing education as well as a diverse selection of menu offerings for an enjoyable dining experience. According to the University of Saskatchewan and Manitoba, 39.5% and 35.3% of students, respectively, consider themselves to be food insecure (Sheridan n.p.; Entz et al. 139). Therefore, Affordable Healthy Options is a value that is relevant in addressing economic sustainability to ensure that all menu items are affordably priced. This project allowed for the collaboration between faculty, students and operations at UBC to provide a holistic approach to address all 3 pillars of sustainability. Success in any of the 3 areas can also be further extrapolated and scaled up by the community, other food service operations and institutions. This way, UBCFS may serve as a point of reference for other operations to follow.

1.3 Project context

Food Vision and Values project is relevant not only to UBCFS, but also, to the broader regional, provincial, and national context. First of all, our project has direct contribution to UBCFS in achieving their goals towards health, wellbeing and sustainability. As this project is one of the numerous LFS research projects overseen by the SEEDS program, a major driver for sustainability on campus, the findings of our project would also contribute to the wealth of knowledge that help support the transition towards sustainable practices. Some of these projects focused on the Real Food Challenge, food recovery, expenditures on vegan and vegetarian at residence dining facilities and free drinking water in campus buildings (Vyssokikh et al. 2; Lu et al. 2; Bertoni et al. 2; Cheng 4). In the regional context, FVV's Seasonal & Local Food value is in line with sections 2.2 and 2.5 of the Metro Vancouver's Regional Food System Strategy, where goals have been set to incorporate local food strategies into purchasing policies to expand the local food sector, and initial targets include public institutions (30). It is possible that

operational changes made by UBCFS can help inform the City of Vancouver and its current strategies. Other municipalities are also moving forward with local purchasing policies. For example, section 4.0 of the Squamish Policy Manual specifically gives priority to purchases within the district, followed by within the province, then within Canada (3). Within the national context, other Canadian institutions recognized as leaders in sustainability have also started implementing protocols for auditing to improve their operations. For example, McGill University uses class projects as a way to audit the energy use in their dining halls, and this has resulted in tangible changes to the dining hall operations, such as decreased energy consumption (Applied Student Research n.p.). Also, University of Toronto created a set of "Local Food" standards that also encompasses other aspects of social and environmental sustainability (Local Food Standards n.p.). All food service locations are required to adopt their Local Food standards to "participate in an annual food procurement audit to ensure transparency and accountability" (Local Food Standards n.p.). At the federal level, The Federal Sustainable Development Strategy for Canada has set target to reduce GHG to 17% below 2005 levels by 2020 (Sustainable Development Office 63). As a country, sustainable practices can also play a role in helping achieve the target for reducing GHG emissions by 30% below 2005 levels by 2030 as set by the Paris Agreement (Climate Change Tracker n.p.). The FVV project is aligned with the goals set by stakeholders across the country at multiple levels of food system seeking to achieve sustainability.

1.4 Project goals

The main goal for the project was to develop an auditing tool that the UBCFS can adapt in the future to track their progress and revise as new agendas arise. The spreadsheet would contain a list of quantitative criteria that is part of the auditing tool for the UBCFS. There would be a special focus on the Free Drinking Water and Vegan & Vegetarian Options food values

based on stakeholder priority and scope of the project. The V&V offerings would be audited at UBC's Open Kitchen (OK) dining hall and accessibility to FDW would be assessed at UBCFS locations on campus. The auditing results would be analyzed and specific areas of improvement and opportunities would be determined so the UBCFS can better align with their food values.

2. Methods

2.1 Community-Based Action Research (CBAR)

We performed the CBAR by following the Look-Think-Act routine. We conducted background research on our stakeholders and the UBC FVV through in-class meetings, emails with our stakeholders and online research into UBCFS websites. This allowed us to gather pertinent information and develop an understanding of the current situation, needs, priority and goals of our community partner. Based on our research and input from our stakeholders, priorities on different components of the project was developed. As a group, we interpreted our findings to determine the best design for our auditing tool and ways to conduct effective audits within the semester that would be useful to our stakeholders. We aimed to report our current progress and ask for feedback regarding the work we had done on a weekly basis. This way, we could continuously improve upon our deliverables and ensure stakeholder expectations were met. We repeated this Look-Think-Act routine until we were able to deliver what our stakeholders had requested in the beginning of the semester in terms of the auditing tool and in-person audit results.

2.2 Secondary data collection

Our secondary data is comprised of: 1) individual literature reviews, which included topics such as tools currently used to audit food systems sustainability, tactics used to address food insecurity, and the challenges of implementing environmentally sustainable procurement strategies, 2) a review of best practices of other institutions and 3) a review of past SEEDS projects.

During our search, priority was given to articles that were local or within Canada. We used common search engines, such as Summon, Google Scholar, and KPU Food Strategy Database to conduct our research. Common keywords in searches included local, ecological, sourcing, procurement, and sustainability. We determined important sources of information to come from local and provincial institutions that were focused on food initiatives, such as those from McGill University and University of Toronto. Another important database that was deemed important included the Sustainability Tracking, Assessment & Rating System (STARS). Previous SEEDS projects, accessed from the SEEDS Library, were considered if they were relevant to our project, including projects from previous LFS 450/FNH 473 classes. Other secondary data collection came from UBC affiliated sources including Food Visions and Values website, Feed Me Now website, UBC 20 Year Sustainability Strategy, UBC Menu Engineering Guideline, and UBC sample procurement sheets. Procurement sheets were provided via email from our stakeholders.

2.3 Primary data collection

Primary data was collected from 1) interviews with David Speight, UBCFS executive chef, and Victoria Wakefield, purchasing manager, as well as 2) direct observations from the site audits. The interviews with our stakeholders helped gauge our progress in creating the auditing

tool, verify the two food values that we would be doing audits on, and obtain general information regarding our project. Interviews were done in-person on January 26th and March 7th in addition to weekly emails for any follow-up questions or clarifications. Our stakeholders created the framework for our auditing tool and our group helped with revising and adding criteria for more than half of the food values based on in-person interviews and emails. We gave consistent updates to our stakeholders about the auditing tool to verify that it was aligned with their expectations. The 2 of the 15 values that were audited were based off of stakeholder priority, group availability, and the timeframe of the project. The FDW was not classified as high priority, but was an audit that easily fit within the time frame of the project. The Vegan and Vegetarian (V&V) food value was considered to be a high priority (Appendix A), but due to group availability it was only conducted at OK. OK was decided as the location for the V&V audit as it was the newest and most convenient UBCFS location to conduct an audit.

The UBCFS locations for the free drinking water audit were obtained from the UBCFS Feed Me Now website (Feed Me Now n.p.). We noted the location of each UBCFS operation and determined which ones would be open within the time of our audit. After noting all the locations that we would visit (n = 33), we divided up the campus into three sectors (north, middle, and southern parts of campus) so that each group member would have approximately equal locations to visit. Each person went to all the locations in their section on Wednesday March 14th between 12-1 pm to fill out the auditing form. The form for the drinking water audit was based off of the auditing tool that we helped design prior to the site audits. Each criterion would be filled with a Yes or a No and cleanliness rated from 1-3 with 1 being unclean, 2 being clean with minor blemishes, and 3 being very clean, and ratings which we were uncertain about would be consulted together as a group. Water upon request criteria was only filled in if the

location did not have a water station. Magda's late-night market was omitted as it was open in the late afternoon and out of reach for our group. The School of Fish food truck was not seen during the timeframe of project.

The V&V audit at OK was done as a group on Wednesday March 14 from 1-2 pm. One person was filling out the form as dictated by another group member while the third member took pictures of the food commodities and the menus. The form used was also taken from the auditing tool spreadsheet and tweaked to suit the OK area. In particular, we wanted to know what menu items were available at each station and how many of these offerings were vegan or vegetarian. Based on the V&V options, we also wanted to know which menu items were high in plant-based proteins. The two audits were only done once due to approaching deadlines.

The data analysis was done as a group in order to compile all the data in a consistent format. The criteria for the drinking water audit was tallied for each UBCFS location and categorized by location type on Google Sheets (i.e. "Residence Dining" or "Residence Markets" categories were counted for how many locations had a water station or station signage). Menu offerings that were vegan and/or vegetarian were also tabulated on Google Sheets based on each station at OK. A Sankey diagram was made to show how many UBCFS locations had a water station. Graphs for the V&V audit were made using Excel.

3. Results

3.1 Literature Review

Four our literature review, we focused on tactics and approaches in auditing food system sustainability initiatives, addressing food insecurity, and environmentally sustainable procurement. Research was also conducted to determine current use of conventionally produced

animal products at other institutions and past research projects that would serve as important points of reference.

Upon review, it was revealed that there is little to no literature regarding the auditing of food system sustainability initiatives such as the UBC Food Vision and Values. While there are some policies which include measurement of success in food service sustainability initiatives, they seem to only be at a micro level (municipal and institutional). There are no overarching general frameworks or recommendations set at a macro level (globally or federally) by highly regarded sources on auditing or measuring actions according to the policies. However, there are some general best practices for auditing in the food service industry. Some examples are benchmarking, checklists, and using third party accreditations. Institutional operations can also self-report to an online database, such as STARS, to track their progress, compare against other institutions and "receive recognition for sustainability leadership" (AASHE-STARS n.p.).

Food security has been incorporated in many policies and programs established in recent years. Countries have begun to implement practices in the agriculture and finance sectors to start addressing food security. An example is the EU Policy which encompasses many aspects of food security such as improving access, availability, nutritional quality of food (An EU Policy Framework n.p.). Some best practices in food security initiatives include the presence of Universal Basic Income (UBI), recycling and using ugly foods, and projects that encourage innovative techniques. As found in a trial in Finland, UBI liberates people from worrying about covering basic needs such as food, and therefore can find more meaningful and lasting employment which increases their food security in the long term (Chakrabortty n.p.). An example of utilizing imperfect foods is found at Google as they incorporate wasted foods in their meals, and this benefits not only the environment, but also purchasers and farmers (Recipe for

Sustainability n.p.). Examples of innovative techniques include e-courses to enhance education of residents in developing countries, stoves that reduce carbon footprint, and solar panels (Scaling Up n.p.). Another novel technique is using large scale data collection to inform operational decisions (Food Security in Guelph n.p.), and to alter food production and purchasing to closely align with consumers' changing preferences, (Recipe for Sustainability n.p.) having potential large reductions in food waste and increased customer satisfaction. Ideas for best practices are not limited to large or small-scale operations and can be adjusted to fit the size of the community given that effort is made to do thorough research prior to implementation. These practices serve as trials while also providing inspiration for other countries and institutions.

According to FAO, 40% of agriculture GHG emissions originate from livestock enteric fermentation, and an additional 23% is associated with manure production and management ("Greenhouse Gas Emissions" n.p.). Food retailers can be viewed as key agents of change in addressing sustainability issues in the food systems due to their procurement, demand, and bargaining power as well as some control over their supply chain (Chkanikova and Mont 65; Morgan 1238). With Canada's participation in signing the Paris Agreement to recognize that "sustainable patterns of consumption and production" are needed to respond to the "urgent threat of climate change", transition towards environmentally sustainable procurement is necessary and in line with achieving the goal (United Nations n.p.).

According to Morgan, establishing an environmentally sustainable procurement strategy is not a single event, but an ongoing process (1247). Tools for assessment, such as codes of conduct, setting consistent stakeholder standards and 3rd party auditing, are employed to monitor the process (Rueda et al., 2482). Food operators may also prefer drivers that encourage sustainable procurement strategies, such as pre-existing best practices in the industry (Pitt and

Jones 1025). Transparency and trust are important factors to achieve a successful implementation of a sustainable food supply chain (Trivette 521).

Background research and a review of current best practices contributed to a deeper understanding on the topic of environmentally sustainable procurement. As of 2015, conventionally produced animal products, which are products purchased by default without verification by a third party or a local producer to be ecologically sound, accounted for 16% of total purchases by UBCFS. This is the second lowest out of all Canadian universities listed in the STARS report (Appendix B). Currently, produce sales have surpassed those of animal products, and UBCFS have set a goal to devote $50,000 to purchasing from the UBC Farm (Wakefield n.p.; Speight n.p.). Best practices at other institutions such as the McGill Feeding McGill Project were also reviewed. This project aims to procure 100% of vegetables from the McGill University campus farm between the months of August and October (McGill University Report n.p.). Also, Stanford University encourages biodiversity by prioritizing their purchases from farms that plant a wider range of crops (Stanford University Report n.p.). Such procurement practices have the potential to be adopted by the UBC campus.

A review of past SEEDS projects can also serve as a comparison to the values we would be inspecting in our current project. For example, in 2014, Cheng assessed the accessibility and ease of use of water outlets across the UBC campus, and identified food service locations that require installation of water outlets (4). Results indicated that food service locations such as Café Perugia, The Loop, Magma Café, and Stir It Up Café were equipped with water outlets, while Neville's Café, IRC Snack Bar, Law Café, Ike's Café and Sauder Exchange Café were not equipped with water outlets (62). We felt it would be a point of interest to follow up on the accessibility in 2018. In terms of V&V Options, a similar SEEDS project done by Bertoni et al.

analyzed sales data of expenditures comprised by plant-based offerings across 10 UBCFS outlets (6). They also found that 41% of offerings at OK were plant-based, while accounting for 34% of its net sales (Bertoni et al. 2). Both previous projects serve as important reference for our Food Vision and Values Project.

3.2 Free Drinking Water Audit

The auditing spreadsheet for the Free Drinking Water (FDW) section shows the criteria used to quantify the presence of water stations (WSs) at inspected food service outlets (Appendix C). Of the 33 UBC Food Service locations in operation at the time of the audit, 15 had self-accessible water stations. On a rating scale of 1 to 3 with 3 being the highest level for cleanliness, 13 of the 16 water stations were rated as a 3 and 2 of the 16 were rated as 2, for an average rating of 2.88. Only 7 of the 15 water stations had signage and 11 were classified as easy to find. Of the 18 locations that did not have water stations, the staff at 14 would fill up a water bottle upon request. The four locations that neither gave water upon request, nor had a water station, were the two food trucks, Dog House and The Hungry Nomad, as well as the IRC Snack Bar and Booster Juice in the Life building (Table 1). A common observation was that the water station was placed in a location visible to the consumer after making a purchase. If there was signage on the station, the signs were very small. When there was no water station, it was common for the staff to seem reluctant to fill up a water bottle, or refer to a fountain outside of the Food Service location. In three cases staff advised us to wait in line for water.

Table 1. Free Drinking Water Audit

		Water Station				Water Upon Request
		Yes/No	Signage (Y/N)	Easy to find? (Y/N)	Cleanliness (1-3)	Yes/No
Residence Dining	Open Kitchen	Y	N	N	3	N/A
	Totem Dining Room	Y	Y	Y	3	N/A
	Gather At Vanier	Y	Y	Y	3	N/A
Residence Markets	Gage Market	N	N/A	N/A	N/A	Y
	Harvest	Y	Y	Y	3	N/A
	Hero Coffee + Market	Y	N	N	3	N/A
	Hubbards Global Market	N	N/A	N/A	N/A	Y
Restaurants	The Point Grill	N	N/A	N/A	N/A	Y
	Sage Restaurant	N	N/A	N/A	N/A	Y
	Ideas Lunch & Wine Bar	Y	N	Y	3	N/A
Café & Specialty	Daily Dose	N	N/A	N/A	N/A	Y
	Ike's Café	N	N/A	N/A	N/A	Y
	IRC Snack Bar	N	N/A	N/A	N/A	N
	Law Café	N	N/A	N/A	N/A	Y
	The Loop Café	Y	N	Y	3	N/A
	Magma Café	Y	Y	N	2	N/A

	Mercante	Y	N	Y	3	N/A
	Neville's Café	N	N/A	N/A	N/A	Y
	Perugia Italian Caffè	N	N/A	N/A	N/A	Y
	Sauder Exchange Café	Y	N	Y	3	N/A
	Stir It Up Café	Y	N	N	3	N/A
National Brands	Bento Sushi	N	N/A	N/A	N/A	Y
	Booster Juice (Life)	N	N/A	N/A	N/A	N
	Pacific Poké	Y	Y	Y	2	N/A
	Triple O's	Y	N	Y	3	N/A
	Tim Hortons (David Lam)	N	N/A	N/A	N/A	Y
	Tim Hortons (Forest Sciences)	Y	Y	Y	3	N/A
	Starbucks (Bookstore)	N	N/A	N/A	N/A	Y
	Starbucks (Fred Kaiser)	N	N/A	N/A	N/A	Y
	Starbucks (Life)	N	N/A	N/A	N/A	Y
	Subway (Life)	Y	Y	Y	3	N/A
Food Trucks	Hungry Nomad	N	N/A	N/A	N/A	N
	Dog House	N	N/A	N/A	N/A	N
TOTAL	**33**	**Y** = 15 **N** = 18	**Y** = 7 **N** = 8	**Y** = 11 **N** = 4	**3** = 13 **2** = 2 **1** = 0	**Y** = 14 **N** = 4

3.3 Vegetarian and Vegan Options Audit

The Food Values spreadsheet criteria for under the V&V section also served as a guideline and feedback to our V&V options audit (Appendix D). From the recorded offerings at Open Kitchen, 117 across 10 stations (Table 2) were used in quantifying the availability of V&V options. The baked goods category was omitted entirely since nearly all items did not have an ingredients list. Breakfast items were excluded since we performed the audit at noon. Snack items, such as those presented near the till, were also not included since it was not the focus of our analysis. Within the 10 stations, 7 items were excluded from analysis due to the lack of ingredients list. Of the 117 offerings included, 76 (65.0 %) were classified as vegetarian (Table 2). Within the vegetarian options 54 of the 117 offerings (46.2%) were determined to be vegan, and 21 (17.9 %) to be a source of plant protein (Table 2). An offering was considered to contain plant protein if a major ingredient was legume, nut or seed based. The types of plant proteins found at Open Kitchen included smoked tofu, hummus, falafel, chickpeas, lentils black beans, as well as hemp seeds, sunflower seeds, and seasoned firm tofu at the Salad Bar. Every station had vegetarian options available, and only two, Al Forno Kitchen and Global Bowl Kitchen, did not have any vegan options. Five stations, Soups, Square Meal Kitchen, Al Forno Kitchen, Grill Kitchen, and Global Bowl Kitchen did not have any vegetarian offerings containing plant protein (Table 2).

Table 2. Offerings at Open Kitchen

Station	Offerings by Station at Open Kitchen			
	n	% Vegetarian	% Vegan	% Containing Plant Protein
Salad and Fruit Bar	22	100*	76*	23*
Vegetarian Kitchen	14	100	64	21
Soups	4	75	75	0
Square Meal Kitchen	4	67**	67**	0**
Al Forno Kitchen	7	71	0	0
Grab 'n Go	37	66***	50***	31***
Sandwich Kitchen	11	46	36	18
Grill Kitchen	16	25	19	0
Global Bowl Kitchen	4	25	0	0
Custom Kitchen	5	20	20	20
TOTAL	117	65.0%	46.2%	17.9%

*Open Kitchen Granola was counted as one salad and fruit bar station offering but not included in subsequent calculations due to lack of ingredients list.
**Spicy Dahl was counted as one offering but not included in subsequent calculations due to lack of ingredients list.
***Chocolate Eclair, Mango Mousse, Jello, Tiramisu and Salted Caramel Brownie were counted as offerings but not included calculations due to lack of ingredients list.

The offerings were also narrowed down to include only entrées at each of the seven main stations at Open Kitchen. This included offerings stated as being entrées on menu boards, as well as the main protein or filling for stations such as Sandwich Kitchen or Custom Kitchen. Of the 42 entrées inspected, 18 (42.9%) were vegetarian. As for the sub-categories of vegetarian options, 7 of the 42 entrées (16.7%) were determined to be vegan and 6 of the 42 entrées (14.3%) to be a source of plant-based protein (Table 3). When looking at just entrées, four of the seven kitchen stations did not have a vegan option and three did not have a vegetarian option

containing plant protein. Vegetarian Kitchen, Sandwich Kitchen, and Custom Kitchen were the only stations offering both a vegan option and an option containing plant protein for their vegetarian entrées.

Table 3. Entrées at Open Kitchen

Station	Entrées by Station at Open Kitchen			
	n	Vegetarian	Vegan	Containing Plant Protein
Vegetarian Kitchen	5	5	2	3
Square Meal Kitchen	2	0*	0	0*
Al Forno Kitchen	7	5	0	0
Sandwich Kitchen	11	5	4	2
Grill Kitchen	8	1	0	0
Global Bowl Kitchen	4	1	0	0
Custom Kitchen	5	1	1	1
	42	18	7	6
OPEN KITCHEN TOTAL	100.0%	42.9%	16.7%	14.3%

*Spicy Dahl was not included in calculations due to lack of ingredients list.

4. Discussion

4.1 Free Drinking Water Audit (FDW)

According to Food Vision and Values, drinking water should be "available free at all food service locations as a sustainable and economic alternative to bottled and sweetened beverages" (Responsibility n.p.). We have further defined "available free" to be self-accessible or available upon request at a UBCFS establishment.

While most UBCFS locations have met the criteria, 4 locations did not meet the requirements during our audit. Food trucks are especially challenging as they are mobile and not connected to a specific water supply. It may be possible to install a refillable station similar to ones at Pacific Poké or Tim Hortons, but revenue from selling bottled water (approximately $2 per bottle) may be lost (Appendix E). Compared to previous findings reported by Cheng, there was a new WS installation at Sauder Exchange Café, while other outlets, such as Neville's Café, IRC Snack Bar, Law Café and Ike's Café were still not equipped with WSs (62).

From direct observations during the audit, WSs at Sauder Exchange Café, Totem Dining Room, and Stir It Up Café were situated in a location that is not easily visible to the customer before making a purchase (Appendix F). This is a problem as customers who do not frequently visit the food service location may not know that a water station is present, and would more likely opt for bottled water or other beverages. When requesting for water at busier FS locations, we were told to wait in line. As lineups are longer during lunch hours, this may discourage students from asking for water.

Previously, Cheng reported a need to install signage for water stations on campus (n.p.). This is still the case as water stations at UBCFS locations lacked uniform signage, and half of the stations did not have signage at all. Some WSs, such as ones found at Sauder Exchange Café and The Loop Café, were not located in close proximity with the rest of the food products, and the presence of signage would likely greatly enhance the visibility to customers (Appendix F, G). Interestingly, at the same counter inside Mercante, the WS with a lack of labelling stood in contrast beside the appropriately labelled compost, recycling and garbage bins (Appendix G). If customers are not aware of the availability and location of WSs on campus and within each food service outlet, they may be less likely to obtain refill water using these WSs. To address a similar

problem, City of Vancouver's TapMap app was developed to identify refill locations throughout Vancouver as a strategy to support drinking water from the tap (Safe Drinking Water n.p.). Currently, the app only located one refill station on the UBC campus, which is much less compared to our findings (Table 1).

During the site audit, reaction of the staff to our request for water was also notable. For example, one staff at Magma Café expressed concern about student access to water, and noted that many students visit the location for refill, while staff at Booster Juice in the Life Building did not seem to expect customers to ask for water. It would be of interest to assess the level of awareness among students and FS employees regarding access to FDW.

FVV are designed to reflect inputs and priorities from multiple stakeholders across campus, including but not limited to UBCFS, UBC Building Operations, Tap Water Declaration Committee (Wakefield n.p.). Therefore, partnership and effective collaboration between stakeholders are required for successfully making drinking water free and easily accessible at all UBCFS locations.

4.2 Vegan and Vegetarian Options Audit

Results obtained from our V&V options audit verified that all offerings included in analysis at Vegetarian Station of OK was indeed 100% vegetarian (Table 2). Out of the 42 entrées, 18 were found to be plant based. 1 entrée and some of the non-entrées appeared to be plant based but we did not include in our analysis due to the lack of list of partial/main ingredients, and this was mainly seen in the desserts at the Grab n' Go (Table 2). Therefore, our results likely may have underestimated the actual number of plant based options available. According to David Speight, target has been set to have 50% of entrée offerings being plant based at all residence dining locations by the year 2020 (n.p.). Currently, OK still requires 6

additional V&V entrées to meet the goal. Proper labeling of ingredients and incorporation of new V&V entrées may be some strategies by which OK can increase their percentage of plant based entrée offerings. Stations that have lower percentage of V&V entrées, such as Grill Kitchen, global bowl and Custom Kitchen, present as opportunities for incorporation (Table 3). However, we did not consider how offerings on Meatless Monday would affect our calculations, since we did not perform the audit on a Monday. Neither did we evaluate the V&V offerings present at other residence dining facilities such as Gather and Totem.

In 2017, a SEEDS project conducted similar research on V&V offerings at OK. However, they did not consider entrées exclusively, nor were custom combination entrées, such as sandwiches, included in their calculations (Bertoni et al. 7). We itemized custom dish offerings based on the availability of proteins. We assumed that a typical customer would choose one protein option at Custom Kitchen and either zero or one filling for a burrito, thus we did not list each type of vegetable as an individual entrée.

Though FVV lists individual values with their own metrics and targets, they are still interconnected. With the incorporation of V&V offerings, it is also important to ensure that V&V offerings provided are nutritionally adequate, particularly its protein content. From our audit, only 33% of all V&V entrées contain high quality plant based protein (HQPBP) (Table 3). As vegetarian entrées may include proteins found in eggs and dairy, our results may have underestimated the total protein levels in the vegetarian category. Proteins in vegan options cannot be supplemented by eggs and dairy, thus presents a greater challenge in terms of nutritional adequacy. This can be addressed with the incorporation of legumes, nuts, and seeds into the menu in forms such as a creamy cashew sauce or vegan chili rich in legumes and beans to help increase levels of HQPBP. A limitation in our analysis was the lack of cut-off point to be

used as reference to distinguish offerings that have sufficient plant proteins from those that have HQPBP, but in inadequate amounts.

Similar to the FDW audit, we focused on signage of V&V options, and from our audit results, all entrées at the front of the Vegetarian Station were properly identified according to the recently implemented menu labelling system featuring gray icons (Appendix H). It is possible that the design of the icons may affect noticeability and consumer choice, however, this was not covered within the scope of our project. There was a lack of consistency in labelling, as some menu tags displayed text signage instead of icons, while other options completely lacked either the vegan or the vegetarian signage (Appendix I). To our surprise, Salad Bar, Fruit Parfait Bar and the Sides and Pasta Bar which also belong to the Vegetarian Station were not icon labeled. Other stations, such as Al Forno Kitchen, Custom Kitchen and Grill Kitchen and Square Meal Kitchen and Sandwich Kitchen were not labelled with the appropriate icons (Appendix I). A limitation encountered during our audit was the lack of complete and comprehensive ingredients list for the offerings. For example, components of entrées in the Vegetarian Kitchen such as Kachumber Salad, Curcumin Lime Dressing, and Tomatillo Salsa, are composed of multiple ingredients which were not listed on the menu display (Appendix I5). This may have introduced error into our results and decreased the level of confidence of our findings. There was also a lack of ingredients list on offerings in the pastries section and Square Meal Kitchen, as well as desserts at the Grab n' Go station, and not including these items in our calculations may have skewed results (Appendix I1, J). Attachment of appropriate icon signage may better inform customers who do not frequently visit OK or use residence facilities. Also, signage incorporation can inform consumers who may be exposed to unfamiliar food items, since it is also the vision of UBCFS to provide a menu that is culturally diverse (Responsibility n.p.).

5. Recommendations

From the above discussion regarding both the FDW and the V&V options audit, a summary of recommendations is provided for future research as well as future actions for our community partners:

Recommendations for Future Research by LFS 450 and/or other faculties:

1) An evaluation of staff and student awareness regarding the current Food Visions and Values, including the access to free water at all UBC Food Service locations.
2) A similar baseline audit of Vegan & Vegetarian entrée offerings at Gather and Totem to compile a complete set of data for entry onto the Food Values auditing spreadsheet and understand how UBC Food Services is meeting the target of having 50% of entrées being plant base at all residence dining locations by 2020.
3) A follow-up on the level of high quality plant based protein options offered on Meatless Mondays.
4) A continuation of the current project to add to and improve on the current set of criteria of the Food Values auditing matrix, with priority on quality and nutrition, affordability and ingredient labelling.
5) More research into the consumer acceptability, visibility and effectiveness of the icon signage system.

Recommendations for Action and Implementation:

Immediate Actions

1) UBC Food Services install uniform signage for all water stations present at all food service outlets to increase visibility.

2) For UBC Food Services locations with free drinking water available upon request, UBC Food Services ensure that free drinking water is listed on the menu display.
3) For UBC Food Services locations unable to provide free drinking water upon request, UBC Food Services provide directions to show customers the location of the nearest water station.
4) UBC Food Services appropriately icon label all vegan and vegetarian options at Open Kitchen.
5) UBC Food Services provide list of ingredients to offerings, especially those in the pastries section, Square Meal Kitchen, and dessert section at Grab n' Go.

Mid-Term Actions

1) UBC Food Services provide clear mapping of locations of water stations. This can be potentially accomplished by collaborating with Metro Vancouver to further update the TapMap app.
2) UBC Food Services increase the number of vegan and vegetarian menu items at Open Kitchen, including those at Grill Kitchen, Global Bowl Kitchen and Custom Kitchen, as well as vegan options at Al Forno Kitchen and Global Bowl Kitchen.
3) UBC Food Services increase the number of high quality plant based proteins in vegan and vegetarian entrées at Open Kitchen.
4) UBC Food Services continue to be proactive in measuring how well they are approaching their 2020 target regarding vegan and vegetarian entrée offerings.
5) UBC Food Services determine a cut-off point for adequate protein content in order to be used to assess the quality of vegan and vegetarian options provided.

Long Term Actions:

1) UBC Food Services collaborate with the Tap Water Declaration Committee and UBC Building Operations to increase access to water stations and free drinking water upon request, such as when renovating or building new food service outlets.

6. Conclusions

Overall, this project allowed for the construction of an auditing tool to help UBC Food Services quantify their operations as a way to measure how well the Food Visions and Values are being implemented. Based on the Food Visions and Values, one time audits were conducted on the Free Drinking Water and Vegan and Vegetarian Options values. From our results, UBCFS lacked access to free drinking water at 4 food service outlets, therefore they did not meet the food value set on Free Drinking Water. Currently, Open Kitchen falls at 43% for vegetarian entrées, which is 7% away from meeting the target of having 50% plant based entrée offerings present by 2020, and the goal can be achieved with the addition of plant based proteins to the offerings, as well as 6 more vegan and vegetarian entrées. Future directions of research as well as actions for implementation were suggested to help UBC Food Services adhere to the Food Visions and Values.

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8. Appendices

Value	Description
Quality and Nutrition*	"We purchase high-quality, nutritious, sustainable foods and prioritize fresh, minimally processed ingredients."
Affordable Healthy Options*	"We are committed to offering and actively promoting an abundance of affordable healthy choices for all meals, in recognition of the contribution eating well makes to academic and professional success."
Food Skills & Knowledge	"We share food and nutrition knowledge and skills to improve the health and wellbeing of our community."
Vegan & Vegetarian Options*	"We encourage reduced red meat consumption by making vegan and vegetarian options readily available, abundant, and affordable, to reduce our impact on our air, land, water, and climate."
Nutrition, Ingredient & Allergen Labelling*	Our commitment to transparency, including labelling with nutritional information, ingredients, and allergens, means our customers can make informed decisions about what they are eating.
Fair Trade	"We are proud to be a designated Fair Trade campus. We strive to offer more Fair Trade and ethically sourced products every year. Humanely raised animals and animal products are purchased when feasible."
Ocean Wise	"We are proud to be an Ocean Wise partner and prioritize purchasing sustainable seafood."
Zero Waste	"We are a Zero Waste partner at UBC and strive to compost all food scraps, use recyclable or compostable single use containers, and offer discount container programs."
Free Drinking Water	"We provide free drinking water at all of our food service locations as a sustainable and economic alternative to bottled beverage purchases and to encourage reduced consumption of sugar sweetened beverages."
Seasonal & Local	"We purchase seasonal foods from local food producers, as close to UBC as possible, to reduce our environmental impact, provide fresh ingredients, and to strengthen British Columbia's and Canada's economies."
Global & Cultural	"Our culinary focus utilizes local and seasonal Pacific Northwest cuisine, while simultaneously striving to offer global inspired and culturally appropriate menu choices."
Prepared In-House	"We strive to prepare as many menu items as possible in-house, based on our menu engineering guidelines developed with our registered dietitian. "

Supplier Code of Conduct	"Our Supplier Code of Conduct set performance expectations and strongly encourages our suppliers to support our Food Vision & Values."
Development & Training	"We support our team with ongoing professional development to drive culinary excellence and meet or exceed our customer's expectations."
Food Safety	"Our rigorous food safety plan consists of procedures, training, and auditing that ensures a safe environment our guests can trust."

Appendix A. List of Food Visions and Values components with description (Responsibility n.p.). * indicates high priority.

Institution	Percentage of total dining services food and beverage expenditures on conventional animal products (meat, poultry, fish/seafood, eggs, and dairy products that do NOT qualify in either the Third Party Verified or Local & Community-Based category)
McGill University	15.1
UBC	16.0
University of Victoria	20.0
Western University	29.6
University of Alberta	29.8
Concordia University	30.4
University of Calgary	37.0
Nova Scotia Community College	38.0
Simon Fraser University	41.6
University of Ontario Institute of Technology	42.0
Dalhousie University	84.0

Appendix B. Comparison of Canadian institutional expenditure on conventional animal products ("STARS Participants & Reports" n.p.). Some verifications may include organic sourced, ethically produced, free run, free range, Ocean Wise and Halal certifications (OP-7: Low Impact Dining n.p.).

Food Vision & Values SHHS | FOOD SERVICES | 2017								
	KPI/QUANTITATIVE							
	MEASURABLE	METRIC					CURRENT VALUE	TARGET
		Number of food service outlets	% of FSOs that have water station on site	% of FSOs with water station that have signage	% of FSOs with water available upon request			
RESIDENCE DINING	Y/N							
RETAIL & MOBILE (EXCLUDING FRANCHISES)	Y/N							
RESTAURANTS & CATERING	Y/N							
OTHER	Y/N							
AVERAGE								

Appendix C. A partial screenshot of the Free Drinking Water section of the Food Values Spreadsheet. Top headings include: Measurable, Metric, Current Value, Target, Certification/Logo, Image, Assumptions, Constraints, Successes, Areas to Improve, Action Items, Stakeholders, and UBC Action Framework.

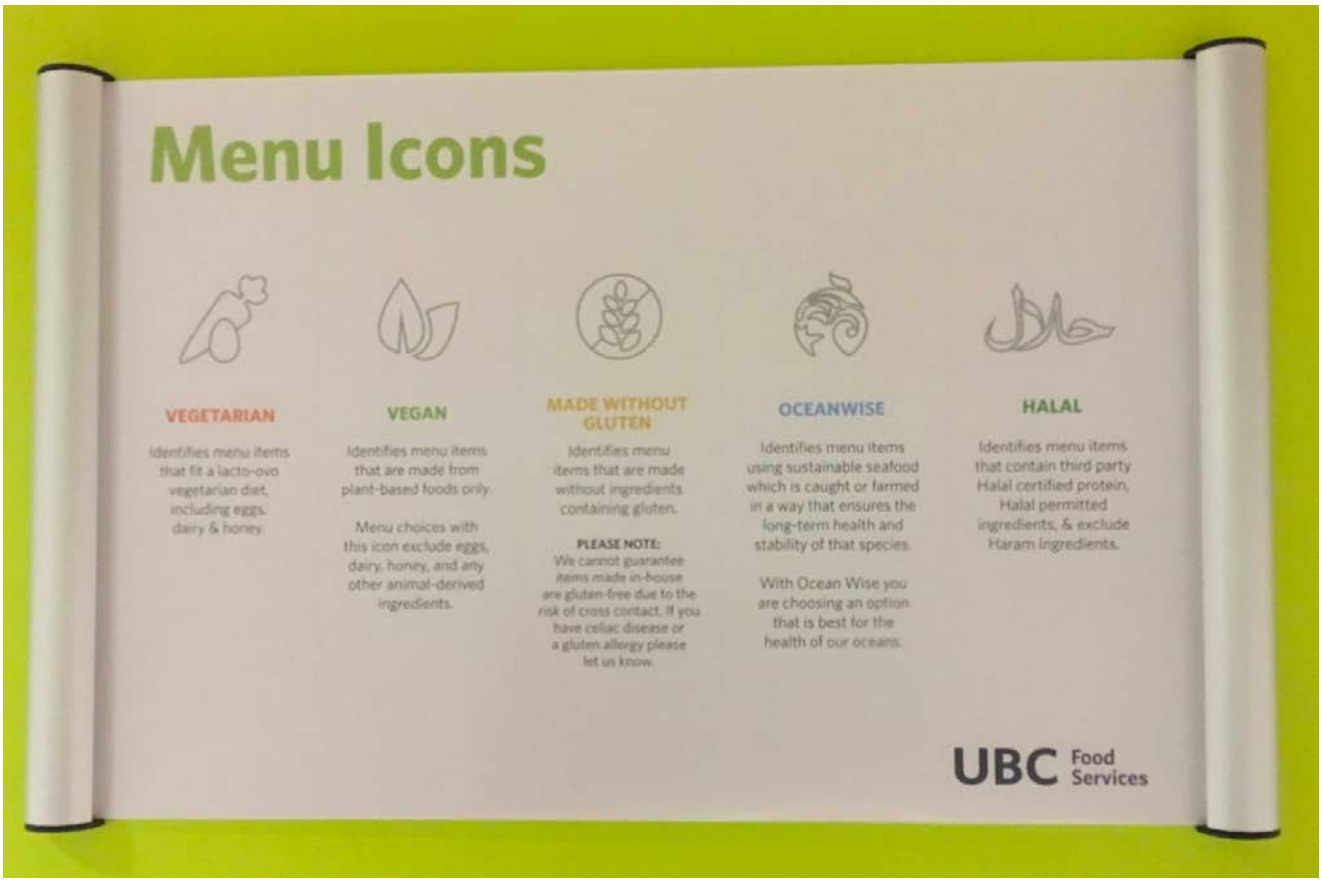
Food Vision & Values SHHS | FOOD SERVICES | 2017											
	KPI/QUANTITATIVE										
	MEASURABLE	METRIC									
		Total number of menu offerings at specified location	Are high protein vegetarian and vegan options available at each dining facility during each meal? (MEG)	Are high protein vegetarian and/or vegan options available at all dining stations of all dining facilities during each meal?	Number of menu items that are vegetarian (including vegan)	Number of menu items that are vegan	Total number of types of plant proteins provided, and list	% OF TOTAL EXPENDITURE ON ANIMAL PRODUCTS (as of 2017)	% OF TOTAL EXPENDITURE ON MEAT ALTERNATIVE PRODUCTS (as of 2017)	% OF TOTAL EXPENDITURE ON CONVENTIONALLY DERIVED ANIMAL PRODUCTS (as of 2017)	% OF MENU ITEMS WITH COMPLETE PROTEIN PROFILE
RESIDENCE DINING	Y/N										
RETAIL & MOBILE (EXCLUDING FRANCHISES)	Y/N										
RESTAURANTS & CATERING	Y/N										
OTHER	Y/N										
AVERAGE											

Appendix D. A partial screenshot of the Vegan and Vegetarian Options section of the Food Values Spreadsheet. Top headings include: Measurable, Metric, Current Value, Target, Certification/Logo, Image, Assumptions, Constraints, Successes, Areas to Improve, Action Items, Stakeholders, and UBC Action Framework.

Appendix E. Standalone water dispensers at Pacific Poké, Computer Science Building (left) and Tim Hortons, Forest Sciences Centre (right).

Appendix F. Water stations at Totem Dining Room (Left), Sauder Exchange Café (Centre), and Stir It Up Café (Right)

Appendix G. Water station at The Loop Café, Centre for Interactive Research on Sustainability (left) and Mercante, Ponderosa Commons (right).

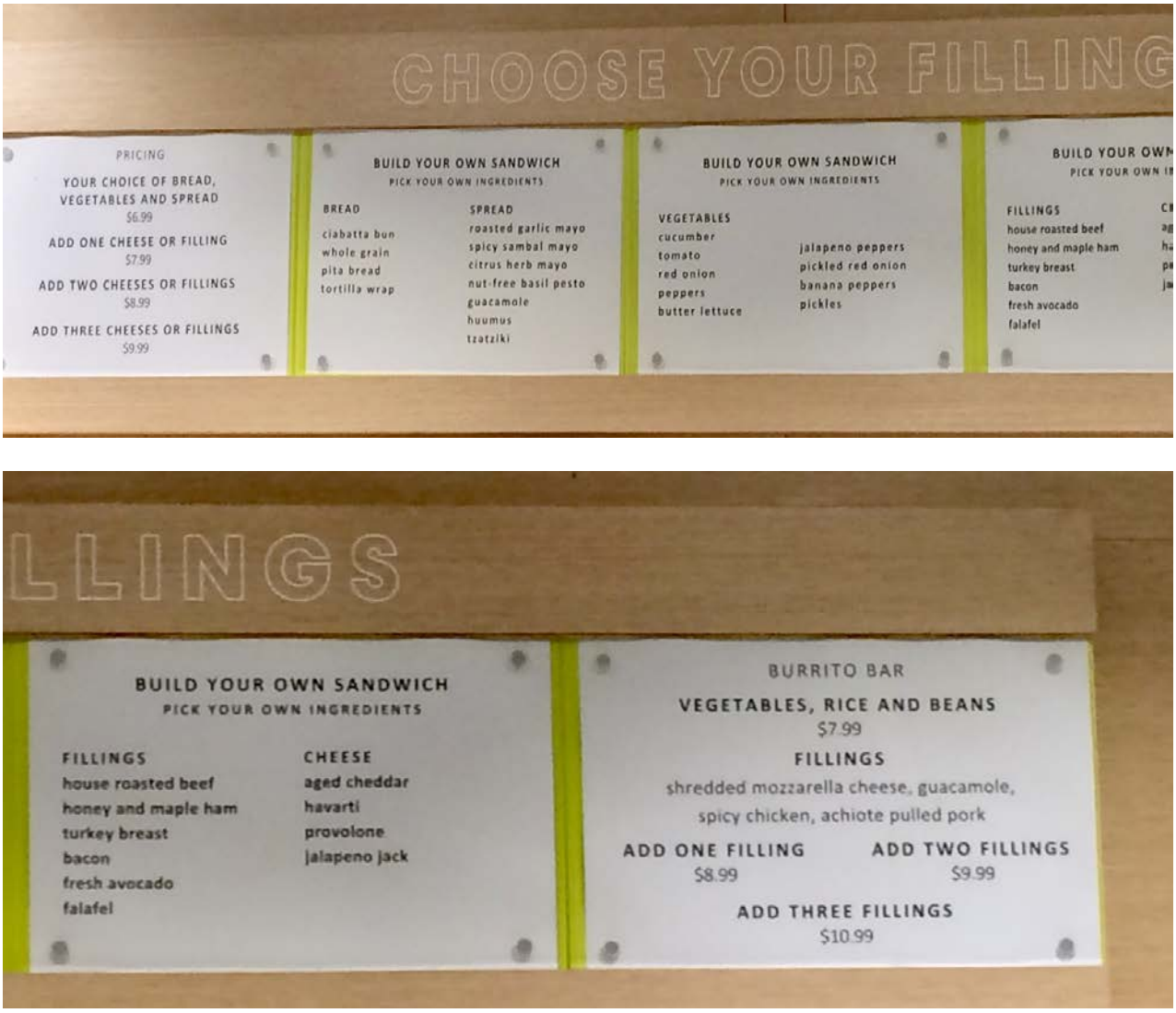


Appendix H. Menu icon signage system implemented at Open Kitchen.

I1. Menu display from Square Meal Kitchen (Main: Butter Chicken, Spicy Dahl; Sides: Garlic Naan Bread, Aloo Gobi), Open Kitchen

I2. Menu display from Al Forno Kitchen, Open Kitchen.

I3. Meu display from Grill Kitchen, Open Kitchen.



I4. Menu display from Sandwich Kitchen, Open Kitchen.

I5. Menu display from Vegetarian Kitchen, Open Kitchen.

I6. Menu display from Custom Kitchen, Open Kitchen.

Appendix I,1-6. Examples of menu display of vegan and vegetarian offerings with and without icon signage at Open Kitchen.

Appendix J. Desserts at the Grab n' Go section (Chocolate Eclair, Mango Mousse, Tiramisu and Jello) (top) and pastries (Raspberry Crown Danish, Custard Crown Danish, Fresh Fruit Danish, Croissant, Cheddar Apple Scone and Blueberry Scone), Open Kitchen (bottom).