

The Green Dining Standard

Greening Canada's Heart through its Stomach

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Executive summary

Canada's cafeterias have a significant impact on the environment. Fortunately, there are multiple ways in which cafeterias can be made more sustainable. Our plan to reduce Canada's ecological footprint is to systematically green its cafeterias by establishing a *Green Dining Standard*.

Our plan is executed in two stages. First, we will further improve the sustainability of Queen's University's cafeteria system. This will be achieved through the formation of a *Green Dining Committee* composed of representatives from Queen's administration, Sodexo Food Services, and the Main Campus Residents' Council who will develop an official "*Greenprint*" for Canada's cafeterias. When implemented, this *Greenprint* will make the cafeterias at Queen's the greenest in Canada and establish a baseline for the *Green Dining Standard*. Queen's cafeterias will become the proving grounds of the Standard, featuring environmental strategies while maintaining quality service.

The second stage of our proposal calls for spreading the *Greenprint* across Canada by hosting it at Greendiningstandard.com. Awareness of the *Greenprint* will be spread by our Committee to the administrators, food service providers, and student groups at universities, hospitals, and other facilities which offer dining services. The website and Committee will provide support and guidance to cafeterias that wish to bring their facilities in compliance with the *Green Dining Standard*. Once in compliance, a profile on the cafeteria's progress will be hosted on the website, inspiring others while giving the cafeteria green publicity.

The *Green Dining Standard* has the potential to revolutionize the way Canadians eat. As the network of *Green Dining Certified* cafeterias grows, the standard will evolve, incorporating new ideas which will make each meal served greener than the last. As the *Green Dining* community spreads across Canada, the *Green Dining Standard* will certainly help in greening Canada's heart, through its stomach.

Word Count: 3707

Introduction – Cafeterias and their Ecological Footprints

All Canadians eat at some point in their lives. Many have the opportunity to dine in one of our nation's *cafeterias*: culinary factories that import, prepare, and provide food to the public on an industrial scale. Unfortunately, cafeterias consume tremendous amounts of energy to acquire, store, cook, and serve their food. After the diners leave, more energy is expended to clean flatware, transport food waste for disposal, and prepare the cafeteria for another wave of customers. Due to the sheer volume of their food processing practices as well as their ubiquity, Canadian cafeterias have a large ecological footprint. Monica Zimmer of Sodexo, a multinational catering firm, estimates that cafeterias consume “five times more energy and water...than any other [building] on college campuses”¹.

To improve the sustainability of their practices, cafeterias must employ not only traditional environmental initiatives (such as using energy-efficient appliances), they must also consider the impact of food transportation, undertake responsible waste diversion, and reduce their food waste. Moreover, this must be executed from a combined top-down and bottom-up approach. This proposal will outline a “*Greenprint*” for reducing the ecological footprint of cafeterias, introduce the Queen’s University cafeteria system as a testing ground for *Green Dining*, and finally, outline the establishment and promotion of a new, national green cafeteria certification system: the *Green Dining Standard*.

Cafeterias and Food Wastage

The disproportionately large ecological footprint of a cafeteria stems, not only from its energy usage, but also from an often-overlooked source: food waste.

University cafeterias are large producers of food waste. In the 2005 Queen’s campus waste audit, organic food waste comprised 28% of Queen’s



Figure 1: Edible food waste in Leonard Dining Hall’s tray returns, Queen’s University.

solid waste stream². A large proportion, if not the majority, of that waste originated from Queen's three cafeterias. Leonard Cafeteria, the largest cafeteria at Queen's, generates *1.8 tonnes* of organic waste per *day*³, roughly equivalent to one Volkswagen Beetle. Cafeterias at other institutions are equally culpable. For instance, the elementary schools in the Californian Davis Joint Unified School District each produce over 9 tonnes of food waste annually⁴. It is also estimated that the global human population wastes **half** of all the food it produces⁵ (while, ironically, many die of malnutrition).

Despite these shocking statistics, the contribution of food waste to a cafeteria's ecological footprint is often overlooked. For instance, the Campus Environmental Resource Center, a project of the US Environmental Protection Agency, failed to include food waste reduction as a step towards improving the sustainability of campus cafeterias⁶.

In reality, however, food wastage has tremendous economic, environmental, and moral implications. First, wasting food represents an enormous financial burden. US food retailers, for instance, collectively discard USD\$30 billion worth of food each year⁷. Moreover, food waste requires management, resulting in significant disposal costs.



Figure 2: Hungry children cuing up for food.

The US Environmental Protection Agency estimates the annual societal cost of food waste disposal to be over USD\$1 billion⁸. Second, wasting food also has immense consequences on the environment. Food waste in landfills decomposes in the absence of oxygen releasing methane, a greenhouse gas that is 20 times more potent than carbon dioxide. The release of methane from landfills constitutes 34% of all methane production in the USA⁹. Additionally, wasting food represents a profound disregard for the energy, water, and other resources required for food production. The University of Arizona has estimated that simply reducing America's food waste in half could reduce America's ecological footprint by 25%¹⁰. Finally, there is a moral imperative to not waste food. Over 1 billion people, 1/6th of the world's population, are chronically hungry¹¹. Therefore, it is immoral for a wealthy nation like Canada to be wasting our food when it could be directed towards feeding those in need, instead of feeding landfills. The U.S. Department of Agriculture estimates that just 5% of America's annual food waste can feed 4 million people daily¹².

A Vision for Greener Cafeterias:

Canada's cafeterias have made progress in making their operations more sustainable. Unlike LEED for buildings, the greening of cafeterias has not yet been coordinated by a uniform national standard. Moving Canada's cafeterias towards a *Green Dining Standard* requires a comprehensive and systemic approach, as discussed below.

Three key areas exist where cafeterias can significantly reduce their ecological footprint:

1. *Reduction of food miles*
2. *Responsible processing of food wastes*
3. *Reducing food wastage*

This multi-pronged strategy makes up the core of the "*Greenprint*" for the *Green Dining Standard* and has especially significant and far-reaching benefits.

Greening the Dining Halls of Queen's University

In recent years, the dining halls of Queen's University have spearheaded many sustainability initiatives via the collaboration of Queen's Hospitality Services (Sodexo) managers, and grassroots student groups (e.g. Queen's Students Against Wasting Food (QSAWF)). These initiatives have helped make Queen's dining halls - and by extension, Queen's as a whole - more environmentally friendly, as evidenced by the "A" that Queen's scored in the 2010 College Sustainability Report Card's "Food and Recycling" category¹³. Despite these accomplishments, we believe that Queen's is able to take the three initiatives of the *Green Dining Standard* even further. These initiatives will be discussed next, followed by the actions Queen's has taken on these fronts (denoted by green subheadings).

1. Reduction of food miles through local food purchasing:

Food is a global commodity, travelling, on average, over 2400 kilometres from its location of production to its place of consumption¹⁴.

However, the global transport of food over such long distances poses two serious threats. First, the carbon emissions from the fossil fuels required for food transport contribute to climate change. Second, potential failures in our food transportation system present a threat to regional and global food security.

We can reduce our dependency on long distance food transportation by consuming local produce. Cafeterias could alter their food procurement policies to favour foods that are produced locally. Better yet, the innovative cafeteria can even grow its own food, through windowsill vegetable gardening¹⁵. Buying locally has many ancillary benefits, such as stimulating the local economy, which directly supports Canadian citizens.



Figure 3: less transportation of food means less CO₂ emitted into the atmosphere.

Procurement of local foods at Queen's University

At Queen's University, Sodexo commits to purchasing 35% of food locally (produced in Ontario)¹⁶.

In addition, Queen's Residence student government, the Main Campus Residents' Council, hopes to install an indoor vegetable garden in Leonard Dining Hall¹⁷. In addition to growing vegetables twice a year, this garden will also serve as an educational display: a constant reminder to student diners about the necessity and practicality of sustainable food production.

2. Responsible processing of food waste: composting

Since cafeterias serve people *en masse*, a great deal of food waste is inevitably produced. Fortunately, food waste is organic, and can be composted. Cafeterias can take their pick of methods for composting food wastes, such as vermicomposting (composting with worms) and industrial composting, either on-site or by shipping organic waste to a centralized composting facility.



Figure 4: picture of compostable organic waste. Even the spoon can be composted if it is made from plant materials.

Overall, composting has both environmental and economic advantages. Composting reduces the volume of waste headed for the landfill, creating savings in waste transportation and tipping fees, while reducing landfill methane emissions and freeing up space for non-compostable materials. Moreover, the compost generated may be used as fertilizer for gardens, golf courses, public land, and farms. This not only reduces the need to purchase petroleum-based fertilizers in bulk, but may also provide entrepreneurial cafeterias with an added source of revenue.

On-site composting at Queen's University

In November 2009, Queen's University became the first Canadian university to install industrial-sized composters to manage organic waste generated within the Queen's dining halls. These composters, with a capacity of 100kg and 300kg, divert 95% of food waste that would otherwise be sent to landfills. The compost is then turned into a soil supplement that is used on campus¹⁸.



Figure 5: A Queen's University Dining Hall staff member composting kitchen waste using one of the new on-site, industrial-sized composters.

3. Actively reduce cafeteria-generated food waste:

As described previously, food wastage has tremendous, yet often overlooked, environmental impacts. Therefore, eco-friendly cafeterias should not just responsibly process wasted food, but should also ensure that food waste is minimized. Given the scale and apparent ubiquity of food wastage in the cafeteria, it is necessary to tackle this issue on at least two levels.

At the production level, overproduction of food is guaranteed to occur in a large scale cafeteria setting which cannot afford to under-provide foods to its clients. This means that a proportion of the food produced daily will not be consumed. Fortunately, since overproduced food is still edible, there

are ways to prevent it from being tossed into the composter (or garbage). For example, cafeterias may distribute it among the staff or offer it at a discounted price the next day. Also, cafeterias may partner with homeless shelters to donate the overproduced food to individuals who could benefit most from a complimentary meal.

Redirecting overproduction at Queen's University: feeding the homeless, not the landfill

In October 2007, a student group launched *Soul Food*, an initiative that redirects overproduced food to Kingston soup kitchens seven days a week. Each month, *Soul Food* saves 2400 meals from being tossed into the landfill¹⁹.

At the consumption level, food wastage by cafeteria users will inevitably occur to some extent. Fortunately, there are ways of reducing this food waste. Such methods can range from student-led education campaigns to top-down, all-encompassing administrative initiatives, such as altering serving practices or implementing a “trayless” program.

“Bottom-up” and “top-down” initiatives to reduce food waste at Queen's University

Example of a student-led initiative: In March of 2008, QSAWF initiated a cafeteria-wide campaign in which students pledged to “take what [they] want, but eat what [they] take.” Over 1000 students participated in the pledge, and a similar campaign will take place in late January of 2010²⁰.

Example of a top-down administrative initiative: Prior to September 2009, Ban Righ Dining Hall, which seats 750 and serves over 2000 students daily, employed a self-serve system that led to about 3-4 tonnes of food waste per week²¹. Since that time, Ban Righ has switched to serving pre-portioned food, a change which has visibly reduced food wastage²².



Figure 6: in a QSAWF initiative, 1037 Queen's students pledged to reduce their cafeteria food waste in September 2008.

Exploring the “trayless” alternative

Trayless cafeterias may seem like a drastic departure from the norm, but it is a *realistic* and *viable* solution to lower food waste and reduce a cafeteria’s ecological footprint. In a study by Aramark (a large-scale food producer and distributor) involving 25 university cafeterias and 186 000 served meals, “going trayless” was shown to reduce food waste by 25-30%.²³ Such a reduction in food wastage means fewer trips to the landfill, less methane emitted from landfills, and ultimately, less food needed to be purchased.

The trayless system also conserves water. An estimated 1.2 L to 1.9 L of water is used to wash each tray²⁴, which adds up to over 4000L - or twenty standard 200L bathtubs – daily for Carleton University.²⁵ Reduced water consumption translates into less electricity used, since less water needs to be heated and washing machines will be in less demand.²⁶ Fewer trays requiring washing also reduce the use of harmful detergents²⁷.

Indeed, a trayless system offers a set of environmental and economic benefits that are inspiring more university campuses to adopt this philosophy. Almost 60% of the 500 campuses supplied by Aramark, and almost 40% of the 600 campuses supplied by Sodexo, have gone trayless²⁸. The trayless nature of most buffet-style restaurants is a further indication that the clientele of cafeterias would be willing to pay for trayless meals.



Figure 7: Trayless dining. Buffets are trayless...why not cafeterias?

Going Trayless at Queen’s University

According to QSAWF, the vast majority of food wastage does not come from overproduced food, but waste scrapings from plates²⁹. Thus, in order to have the greatest impact in cafeteria food wastage, the dining paradigm at Queen’s University cafeterias must change. Students must realize the perils of food wastage, and institutional structures should be in place to help diners make conscientious decisions about food. We believe this dining paradigm shift would be best brought about by a “trayless” program, a top-down-food-waste-reduction initiative.

Trayless is more than simply eating without trays or saving money; it is a *cultural transformation*. The absence of trays enables all diners to be aware of how much food they eat, and removes the temptation of taking more food than they can – or should – consume. In addition, students are inclined to be more selective – and thus more satisfied – with their food.

A collaborative effort between QSAWF and Sodexo launched a pilot trayless program at Jean Royce Dining Hall in November 2009, dubbed “*Trayless Tuesdays*.” During the first three weeks of the Trayless Tuesday program, food wastage decreased by 34% per person compared with non-trayless days³⁰.

A full implementation of a trayless system at all three Queen’s cafeterias will have a significant impact in reducing food waste, as proven by the success of this pilot project. In the 2008-2009 school year, Leonard Dining Hall, on main campus, wasted 3-4 tonnes of food per week³¹. If going trayless lowers food wastage by 34% per person, then weekly food waste in Leonard Dining Hall would decrease by up to *1.36 tonnes*, which is equivalent to a Smart Car.

The benefits of trayless dining are evident, but its success depends on the support of the student population. In November 2009, a survey of student diners at Jean Joyce Dining Hall showed that 65% of students would support trayless “as is”, but 79% would give their support if larger cups were introduced. Currently, the cups used in dining halls across campus are made of glass and are able to hold 8-10 ozs of beverage. Larger acrylic cups would hold about 20 ozs of drink and would not only increase the support for trayless, but allow for greater portability and ease of stacking in the cafeterias.

Fortunately, Sodexo managers have stated that larger acrylic cups can be obtained from other Sodexo cafeterias that are known to be closing down in the near future³²; re-using supplies instead of purchasing new ones – a more environmentally-responsible approach. The current cups and washing equipment utilized by Queen’s can be donated, recycled, or repurposed. The only obstacle is funding the installation of new cup washing machines.

If the Queen’s dining halls were to go completely trayless, it would mark the final step required in order to enable Queen’s to meet the requirements of the *Green Dining Standard*, as defined by the “*Greenprint*”.

Creation of the *Green Dining Standard*

The Queen's, Sodexo and student groups partnership

At Queen's, the collaboration of administrators, food service managers, and student groups have provided input to assist in the creation of a *Green Dining* experience. As a result, Queen's has a unique opportunity to create one of the greenest dining experiences in Canada and to lead by example. At Queen's, we procure food locally, compost onsite, and strive to actively reduce food waste. These initiatives, when implemented together, are the key components of the *Green Dining Standard*, an environmental paradigm which we hope to see applied by cafeterias across Canada. The creation of a *Greenprint*, describing the three major *Green Dining* initiatives outlined above, will provide guidance for other dining facilities to improve their *Green Dining* practices.

The Green Dining Standard

To formally establish the *Green Dining Standard*, a *Green Dining Committee* will be created. The *Green Dining Standard* and *Greenprint* will be the joint initiative of the Green Dining Committee. The Committee will be composed of two representatives each from Queen's Hospitality Services, Sodexo, and the Residence student government body. The Committee will be responsible for defining the objectives of the standard, as well as documenting sustainability criteria, infrastructure, and programs required to bring a cafeteria in compliance with the Standard. This collaboration will result in the creation of an official cafeteria *Greenprint*, which clearly outlines the benefits and the steps needed to implement the *Green Dining* practices. As the feasibility and benefits of the *Green Dining Standard* have already been established at Queen's, we will be able to support other cafeterias in their "greening". To recognize cafeterias that attain the *Green Dining Standard*, the Committee will define an assessment process and approval criteria, which will recognize cafeterias for their adoption and observance of the *Green Dining Standard* and will designate them as official *Green Dining Certified* institutions. Cafeterias that wish to attain the *Green Dining* certification will be responsible for reviewing their operational practices and physical infrastructure (with the aid of the *Greenprint*) to make the necessary improvements required to comply with the *Green Dining Standard*.

Spreading the Greenprint

Following the creation of the cafeteria *Greenprint*, Queen's will share it with institutions such as other universities, colleges, hospitals, and schools across Canada. As the *Green Dining Committee* is composed of residence administrators, food service providers and student groups, these parties will promote the *Greenprint* to their counterparts at many other institutions. Such tailored communication will better entice and empower other institutions to follow Queen's lead. Moreover, empowering both students and administrators will ensure that the will for change comes from both the top-down and the bottom-up, giving the *Green Dining Standard* added momentum at external institutions. We have already pitched our idea for the creation of the *Green Dining Standard* to Sodexo managers, who have expressed their support³³.

Greendiningstandard.com

To disseminate knowledge of the *Greenprint* and enthusiasm for greener cafeterias, the *Green Dining Committee* will create a website. The function of this website will be to host the *Greenprint*, recognize *Green Dining Certified* institutions that follow the *Greenprint*, and provide a forum for communication and collaboration. This website will make the *Greenprint* easily accessible, and display its contents in a clear, user-friendly, and direct manner. There will also be opportunities to provide feedback from professors, students, environmental groups, and other parties of interest. The second objective of the website is to recognize cafeterias that observe the *Green Dining Standard*. Upon meeting the standard, the cafeteria will be featured on the *Green Dining* website alongside the initiatives, parties involved, efforts to date, and future plans. This will enable members to observe what other institutions are doing and facilitate communication among cafeterias running similar initiatives, fostering opportunities for mentorship. Finally, to facilitate communication among the institutions that observe the Standard or hope to attain it, a private discussion forum will be created in order to connect interested parties, and to share operational procedures and advice. Additionally, public discussion forums will be created, allowing input from experts and activists alike. Harnessing the power of the internet, the website will play a seminal role in spreading awareness of the *Green Dining Standard*, facilitating communication between like-minded individuals and institutions.

Journey to excellence

As the first soon-to-be university to abide by the *Green Dining Standard*, Queen's will set the bar and encourage other institutions to meet or exceed the baseline standards established by the *Green Dining Committee*. Furthermore, as awareness of the program increases, a growing number of cafeterias will abide by the *Green Dining Standard*, and will create profiles to be featured on the website. This will represent a network of support, actively involved in sharing ideas, reporting the results of new initiatives and providing feedback. The feedback is critical as it will enable the Committee to continually improve on the *Greenprint*, by adding new initiatives, ideas and materials. This continuous improvement will challenge all members of the *Green Dining* network to further reduce their ecological footprint and improve their *Green Dining* experience.

Conclusion

In summary, cafeterias have an immense impact on the environment in Canada due to food procurement practices, operational energy requirements and waste management. However, as evidenced by the strategies discussed in the *Greenprint*, such as going trayless, on-site composting and local food procurement, the status quo can be challenged, providing better food at reduced economic and environmental costs. Our proposal is to systematically green Canada's cafeterias by working locally at Queen's to make its cafeterias the flagship eco-cafeterias for the *Green Dining Standard*. Following this local initiative, we will work to spread the Standard and provide guidance to institutions wishing to follow Queen's lead. Our work will not end there. As the network of cafeterias abiding by the *Green Dining Standard* grows, we will continually improve upon the Standard. This will be achieved by implementing ideas found to be successful at Queen's or other institutions. We will work to continually grow and expand the initiatives featured in the *Green Dining Standard*. In turn, the Standard will shrink the collective ecological footprints of Queen's cafeterias, while ensuring the provision of greener meals to Canadians, with locally sourced ingredients that fill the stomach and feed the soul, instead of the landfill.

End Notes:

- ¹ The Associated Press. (2008, August 25).
- ² Queen's Hospitality Services. (2008, May). – pg 17
- ³ Queen's Hospitality Services. (2008, May). – pg 17
- ⁴ Nagle, J. (2009, March).
- ⁵ Jacquot, J. E. (2008, August 22).
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- ⁷ Oliver, R. (2008, January 22).
- ⁸ United States of America. Environmental Protection Agency. (1999, December 1). – pg 7
- ⁹ Oliver, R. (2008, January 22).
- ¹⁰ Oliver, R. (2008, January 22).
- ¹¹ UN World Food Programme. (2010).
- ¹² Kantor, L. S., Lipton, K., Manchester, A., Oliveira, V. (1997). – pg 3
- ¹³ The College Sustainability Report Card. (2009).
- ¹⁴ Heller, M. C. and Keoleian, G. A. (2000). – pg 40
- ¹⁵ Yu, November 2009. *Leonard Garden Proposal*. (Unpublished personal communications).
- ¹⁶ Drake, J. (2009, November 9).
- ¹⁷ Yu, November 2009. *Leonard Garden Proposal*. (Unpublished personal communications).
- ¹⁸ Queen's News Center. (2009, November 11).
- ¹⁹ Queen's Hospitality Services. (2008, May). – pg 19
- ²⁰ Personal communications with QSAWF Founder and former Coordinator, Yan Yu (January 3rd, 2010)
- ²¹ Personal communications with Joli Manson, General Manager of Sodexo at Queen's University, September 2009.
- ²² Personal communications with Joli Manson, General Manager of Sodexo at Queen's University, September 2009.
- ²³ The Associated Press. (2008, August 25).
- ²⁴ Brown Dining Services. (2010).
- ²⁵ Laucius, J. (2009, October 21).
- ²⁶ Laucius, J. (2009, October 21).
- ²⁷ Laucius, J. (2009, October 21).
- ²⁸ The Associated Press. (2008, August 25).
- ²⁹ Personal communications with Queen's Students Against Wasting Food members, September 2008.
- ³⁰ Personal communications with Mike Wood, Manager of Jean Royce Dining Hall, January 5th, 2010.
- ³¹ Personal communications with Queen's Students Against Wasting Food, September 2009.
- ³² Personal communications with Phil Sparks, Sodexo Resident District Manager, January 4th, 2010.
- ³³ Personal communications with Phil Sparks, Sodexo Resident District Manager, January 4th, 2010.

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- Figure 1: Photograph taken by Yan Yu – September 2008
- Figure 2: Taken from: <http://rariggs.wordpress.com/2009/03/11/hungry/>
- Figure 3: Modified from Microsoft Word Clip-art.
- Figure 4: Taken from: <http://www.treehugger.com/files/2008/08/half-food-wasted.php>
- Figure 5: Taken from: http://qnc.queensu.ca/campusnews_article_loader.php?id=4afaf380818b8
- Figure 6: Photograph taken by Yan Yu – September 2008
- Figure 7: Taken from: <http://barfblog.foodsafety.ksu.edu/uploads/image/trayless.jpg>

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