

METHODOLOGY FOR DEVELOPING A COMPREHENSIVE GREEN DINING PROGRAM AT A UNIVERSITY

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Introduction

In the Fall of 2004, Duke University carried out an inventory of the environmental impacts associated with campus dining services. The goals of the inventory were to analyze Duke Dining's current environmental performance for the purposes of launching a comprehensive green dining program and to set a benchmark against which Duke Dining could measure its future progress. This paper describes the inventory methodology we developed and implemented, the findings and recommendations that resulted from the inventory, and the lessons we learned that may be useful to other institutions similarly interested in comprehensively greening their dining services.

Why Duke Decided to Address the Environmental Impacts of Dining Services

Food is an important part of life. It nourishes the body and mind, provides opportunity for social interaction, and reaffirms our connection with the Earth. Yet not all food is equal. The ways in which we farm, prepare, and serve food have important implications for the environment and society. Ingredients shipped cross-country often require the application of preservatives and the loss of flavor. Chemicals and pesticides harm our bodies and flow into streams and rivers. Plastic and aluminum foil enter landfills where they remain for hundreds of years. While difficult to quantify, the environmental impact of conventional dining services is substantial.

In recent years, students, faculty, employees and parents have begun to expect ever-greater environmental stewardship from Duke Dining Services. From recycling to organic coffee, to vegetarian and vegan meal options, to composting of food-waste, campus eatery managers are increasingly being asked to address the environmental impact of their operations. At Duke, these types of programs have been implemented in a patchwork fashion across the 23 privately operated eatery concessions. In order to develop the kind of comprehensive and campus-wide green dining program that Duke community members have come to expect, Duke decision-makers needed to learn what the independent eatery operators had and had not tried and what challenges and opportunities the University might encounter in establishing a campus-wide green dining program.

Introduction to Duke Dining Services PACE Program

As mentioned above, all of Duke's 23 eateries are operated by concessioners. The table at right gives an overview of Duke's concessions. For a complete list of eateries, see Appendix A.

Dining Services has two safeguards in place to ensure that University standards are upheld by eatery operators. The first, periodic contract review, is an industry standard tool that allows Dining Services to expire contracts for those eateries not meeting sufficient standards. The second tool is the Performance Assessment for Culinary Excellence (PACE).

PACE is unique to Duke, having been developed by Duke's Dining Services Director, Jim Wulforst, after touring US military canteens and learning about their performance evaluation system. The PACE assessment uses a scorecard to rate eateries on over 100 criteria in five categories:

- Kitchen Operations
- Serving & Dining Operations
- Training, Personnel & Readiness
- Sanitation & Repair Maintenance
- Management & Contract Compliance

The scoring is based on data collected through unannounced site visits, by mystery shoppers and quarterly reports required of the eateries. The results are publicized to the Duke community, feedback is given to eatery managers, and top performers receive annual bonuses. Low ranking concessions are encouraged to improve their performance or risk losing their concession.

The PACE scorecard already incorporates a number of points for reduction of food waste, the quality of vegetarian options and recycling. However, the points available for these criteria number fewer than 50 out of 1,000 possible points. Many of the recommendations in this report include modifying the PACE scorecard to include additional environmental performance criteria and to increase the number of points available for these criteria.

<i>Duke Dining Services Facts</i>	
Number of eateries?	23 eateries
Concessions?	All are private concessions
How many meals a year?	3.3 million
Annual revenue?	\$27 million
Types of eateries?	
Restaurants	5
Cafés	4
Fast Food Franchises	4
Coffee Shops	3
Cafeterias	2
Grills	2
Delis	2
Juice Shops	1
Types of concessioners?*	
Local/family business	7
Local franchisers	3
Multinational foodservice management company	1
<i>* Some concessioners operate multiple eateries.</i>	

Study Methodology

The study was conducted during the 2004 Fall semester through a student internship. Greg Andeck, a student in the 2005 class of Masters of Environmental Management at the Nicholas School of the Environment, was hired by Duke's Environmental Sustainability Coordinator, Sam Hummel, to carry-out the inventory.¹ Before the internship began, Hummel and Andeck obtained the support and guidance of Dining Services Director, Jim Wulforst.

The inventory focused on five major areas of environmental concern: food ingredients, solid waste, chemical use, energy consumption and consumer education. The omission of water consumption from the study was a major oversight that will be rectified in the future.

Two tools were used to conduct the inventory: an interview and a site visit. (The interview questions used can be found in Appendix B) Interviews were conducted with each eatery manager and then immediately followed by a site visit to verify answers to the interview questions. A pre-interview site visit was often included if the interviewer was not already familiar with the eatery. Questions about the volume and type of each eatery's business were also asked for normalization purposes.

While the goal of the inventory was to establish a baseline measurement of the environmental performance of Duke's eateries, it was also an important opportunity to introduce new ideas, develop relationships and identify allies for developing a comprehensive green dining program. For this reason, it was important for the interviewer not to come across as an auditor or investigator. Every effort was made to present the interviewer as a free resource being provided by Duke to eatery managers in order to assist them as they strive to meet their customers' expectations for environmental stewardship.

Findings and Recommendations

1. Food Ingredients

A. Transparency of Farming Conditions

All of the eatery managers expressed that they currently have little knowledge of the origin of their products, especially food items. Almost every eatery purchases its food products from national or even global distributors. Eatery managers consistently mentioned SYSCO and US Foodservice as their primary food purveyors. These suppliers offer a wide selection of products at low prices. Eatery managers appreciate that these

¹ Funding for the project came from the Green Grant Fund, which was set up in 2003 by Duke's Executive Vice President, Tallman Trask. The Fund makes \$50,000 available annually to support student, faculty and staff initiated projects and programs that will have an "environmental payback" for Duke. Learn more:

<http://www.duke.edu/sustainability/grant.html>

companies are a single source for ingredients, beverages, cleaning chemicals, disposables and other supplies. However, the managers felt they had no way of knowing whether a head of lettuce came from California or North Carolina, or whether chemicals were used in its cultivation. Likewise, the managers had little knowledge of the treatment encountered by the animals used to produce their dairy, poultry and meat products.

Recommendation # 1: Work with current food service providers to determine the origin and conditions under which ingredients are produced.

Recommendation # 2: Develop standards for measuring the transparency of farming conditions and the environmental preferability of farming practices within major product areas.

B. Local Farms

Only 3 eateries on campus purchase ingredients directly from local producers. The local purchases made by these three were primarily limited to local bakeries. The managers of the corporate franchises operating on campus indicated that they are required to use specific suppliers. For example, McDonalds is only allowed to purchase supplies from the McDonald's supplier, Golden State.

Several managers had a perception that small farms may operate under sub par health standards compared to large factory farms. A few managers expressed concern about the extra preparation time that would be required to use locally produced ingredients that had not been pre-prepared.

Recommendation # 3: Work with local farmers and farmer collectives to identify local sources for sustainably produced ingredients that offer dependable service and quality. This effort will require patience and a single point of contact at Duke as developing these relationships will take time and trust. As sources are identified, Dining Services should promote these sources for use by the eatery managers.

As a result of this inventory, Duke Dining Services is in the process of hiring a full time green dining and quality control position to facilitate this process.

Recommendation # 4: Determine a fair and reasonable modification to the PACE scorecard that would encourage the use of local food sources.

Recommendation # 5: Arrange for eatery managers and staff to visit local farms and for local farmers to visit eateries. Developing relationships between farmers and eatery staff will help overcome misperceptions and establishing trust.

Recommendation # 6: Investigate the feasibility of establishing an on-campus or near-campus garden for the cultivation of produce that may be difficult or costly to obtain from local sources.

C. Organic Ingredients

Of the 23 eateries on campus, only the upscale Washington Duke Inn regularly uses organic ingredients, other than coffee. Eatery managers described cost premiums as the primary obstacle to the use of organic products.

Recommendation # 7: Organize a student internship, independent study or masters project that researches the price premium associated with organic products and identifies cost competitive organic options.

Recommendation # 8: Determine a fair and reasonable modification to the PACE scorecard that would reward eateries that use organic ingredients, beyond coffee.

Recommendation # 9: Adopt definitions for “organic,” “local,” “sustainable,” and “fair trade.”

D. Seafood

Of the 15 eateries that serve seafood on campus, only 2 use a sustainable seafood list to guide seafood selections. The two eateries that do are the high-end Washington Duke Inn and Faculty Commons. Nearly every eatery on campus that serves seafood had some seafood product on the Seafood Watch² “avoid” list. Most eatery managers were unaware of environmentally friendly alternatives. Several managers knew that salmon was on their menu, but were unsure whether its origin was farmed, Atlantic or Alaskan – differences that change the fish’s placement on the Seafood Watch list.

Recommendation # 10: Investigate seafood menus to determine the species and origin.

Recommendation # 11: Determine which sustainable seafood list Duke wishes to use for guidance and revise PACE to reward eateries for using seafood products recommended by that list.

E. Coffee

Just over half of the eateries serving coffee on campus offer a sustainable blend (organic, shade-tree, and fair trade). Most of the establishments on campus serving large amounts of coffee offer only sustainable coffee from either Counter Culture Coffee

² There are a number of sustainable seafood lists available to concerned seafood consumers. The one mentioned here is produced by Seafood Watch, which is a program of Monterey Bay Aquarium. Seafood Watch recommends which seafood consumers and seafood purveyors should buy or avoid. Learn more: <http://www.seafoodwatch.org>

of Durham or Larry's Beans of Raleigh. The beans from both of these local roasters are 100% organic, fair trade, and shade grown. Counter Culture coffee is currently served at Blue Express, Faculty Commons, and the Great Hall. Larry's Beans coffee is currently served at Alpine Bagels, Alpine Atrium, the Perk, & Sanford Deli. Most other locations serve small amounts of coffee on a daily basis, with the exception being Trinity Café and the Blue Devil Beanery. The Blue Devil Beanery currently serves Starbucks coffee.

Recommendation # 12: Adopt a campus-wide policy requiring the use of fair trade, organic and shade-grown coffee products.

As a result of this inventory, Duke Dining Services has already implemented this recommendation.

2. Solid Waste

A. Recyclable Materials

One hundred percent of the eateries currently recycle cardboard and most recycle cooking grease. Twenty-six percent of eateries recycle cans and bottles in the kitchen and 13% have recycling containers available for customer use in the dining area. Campus eateries generate multiple materials that may be recycled. Large #10 tin cans, large plastic food containers and jugs, and glass bottles are all recyclable in the kitchen. Plastic, glass and aluminum beverage containers could be recycled in the customer areas. Although in smaller quantity, paper in the form of newspapers, advertisements, menus, and sales receipts could also be recycled. While these items are regularly recycled in academic buildings and dormitories, these items are currently being discarded in most campus eateries. Although not measured directly, it is clear that foodservice waste represents a significant portion of Duke's trash.

Almost all eatery managers viewed recycling as an easy and acceptable change to their operations. There will be some challenges to the successful implementation of recycling in every eatery location. Managers noted that an individualized recycling program will need to be developed for each location, as the volume and type of recyclables consumed varies greatly between eateries. Secondly, space is already a premium in kitchens and seating areas. Finding space to locate recycling containers will require flexibility on the part of management.

It was found that Duke is currently paying to have waste grease hauled off, which should not be necessary under current market conditions. According to phone calls placed to local purchasers of yellow grease, demand for waste grease has grown in North Carolina because it is now being recycled locally into animal feed, soap, biodiesel and compost. Ideally, Duke should rate the sustainability of each option and choose the most sustainable end-use for its waste grease.

Recommendation # 13: Develop and implement a method for estimating the diversion rate of recyclables at each location in order to establish a baseline and track future improvements in source reduction and diversion of recyclables.

Recommendation # 14: Install recycling containers in all eatery kitchens and customer areas.

As a result of this inventory, Duke Recycles and Dining Services are working together to set up a recycling program tailored to eatery needs.

Recommendation # 15: Increase the points available in the PACE scorecard for recycling in the kitchen and customer areas of eateries.

Recommendation # 16: Review the environmental preferability of available waste grease recycling options. Find a waste grease recycler that will pay Duke for its waste grease.

B. Dishwashing

Of the twenty-three eateries examined in this study, one-third regularly used permanent, washable flatware. Some eateries with dishwashing capability were only providing washable flatware upon customer request. Some of the eatery managers with dishwashers complained about high labor costs and the difficulty of keeping up with the mealtime “rush” of customers. Some of the eateries lacked dishwashing equipment and do not have the space to install it.

Recommendation # 17: Investigate the life-cycle impacts of dishwashing versus using disposable flatware made of various materials. If dishwashing has a lower environmental impact, require eateries with dishwashing capacity to use permanent flatware and dishwashing.

C. Disposables

Fifty-six percent of eateries use plastic for their primary container needs and 43% use Styrofoam/polystyrene, either for dine-in plates or to-go containers. Eatery managers commonly stated that plastic and polystyrene plates are used in place of paper plates because durability is needed when wet foods with liquids or sauces are served. The two “to-go” containers most commonly used on campus include Styrofoam and clear plastic “clamshells.” The clear plastic clamshells are most often used for cold food, while Styrofoam is preferred for its insulating value in keeping food warm.

Most of the eateries serve drinks in paper cups. Hot beverages are most often served in heavy paper cups with sleeves. Unfortunately, because paper cups are not highly insulative, staff sometimes double-cup each beverage instead of using the sleeves.

Apline Bagels uses an innovative paper cup that is manufactured by Dixie Foods to have insulative qualities similar to polystyrene cups. A few eateries that do not serve many hot beverages, such as McDonalds, do use polystyrene cups. When fountain drinks are being served, eateries generally use Coca-Cola wax paper cups for to-go and sometimes dine-in needs. Plastic cups are often used when the transparent nature of the cup is important to the eatery manager – for example, Quencher’s smoothies and free water cups.

Plastic utensils are used universally for take-out and in some cases dine-in. It is good that no eateries use the pre-packaged combinations of fork, spoon, knife, salt, pepper and napkin.

Bleached napkins are used in 9 out of 10 eateries. The large volume cafeteria style eateries provide napkins at the table while most of the other eateries do not. Studies have shown that napkin use can be decreased as much as 50% by making them available at the table rather than at the check out line. (Saphire 1998)

Samples of the disposables used by each eatery were collected by the interviewer. Pricing information was obtained as well. This information can be used to identify environmentally preferable options that compete on the basis of cost and quality. (Note: The pricing information is confidential and cannot be shared.)

Recommendation # 18: Develop and implement a method for collecting the type and quantity of disposable containers used in each eatery. This will be important for quantifying and tracking the environmental impact associated with the use of disposables on campus.

Recommendation # 19: Revise the PACE scorecard to discourage the use of disposables for dine-in purposes and encourage innovative source reduction.

Recommendation # 20: Investigate the full life-cycle impacts of paper, plastic, and polystyrene containers to determine which materials truly offer the lowest environmental impact. Identify sources for the products made from the material determined to have the lowest life-cycle environmental impact and modify the PACE scorecard to encourage the adoptions of these products.

As a result of this inventory, Duke Dining Services is currently investigating alternatives and their relative environmental impacts for campus wide use.

Recommendation # 21: Revise the PACE scorecard to encourage the use of unbleached napkins and their placement at the point of use rather than the point of purchase.

As a result of this inventory, Duke Dining Services has already implemented a policy requiring the use of unbleached napkins in all eateries.

D. Food Waste

Nearly all campus eateries are efficient in their use of raw ingredients, so little edible food is thrown out in the kitchen. Only 25% of eatery managers have indicated they have food that could be donated. This is a good sign as it suggests that the eateries are preparing food progressively to meet incremental demand. Besides being a good business practice for reducing costs, progressive preparation is currently encouraged and rewarded in the PACE scorecard.

Most eateries with edible leftovers are already reusing them in soups or donating them to soup kitchens or charities. Some eateries donate to charity on an ad hoc basis when they have unexpected leftovers from catering or other events and some allow needy employees to take leftovers home. Only two eateries have regular supplies for donation. These donations are collected by The Food Shuttle, a non-profit based in Raleigh.

According to managers and site visits, it does not appear that customers throw away a great deal of food, except in the two “all you can eat” style facilities on campus. The lack of food waste by customers at the a-la-carte eateries is likely a result of customers watching their wallets and trying to make sure they eat what they’ve bought. The emphasis the PACE scorecard already puts on reducing customer food waste through appropriate portion sizing, staff training and waste vigilance probably also contribute to the low amount of customer food waste in these eateries.

One of the “all you can eat” eateries on campus represents 15% of the meals served on campus, while the other is comparatively small. Duke feels it is important to maintain this “all you can eat” facility for the freshman board plan to encourage students to get into the habit of eating health consciously rather than cost consciously. Under a pilot program coordinated by Duke Recycles, all of the food waste collected from plates in the freshman cafeteria is composted by an outside company.

With the exception of the pilot compost program on East Campus, every kitchen was putting non-edible food scraps, such as peelings, in the trash. Eighty-two percent of eatery managers said that they would be interested in joining a University-wide composting program, provided that it was easy, clean, and free.

Recommendation # 22: Conduct consumer education in the “all you can eat” eateries encouraging customers to reduce their food waste.

Recommendation # 23: Investigate the possibility of establishing a campus wide composting program. Collection, routes and a compost site will need to be identified. Compost site options include the Duke Forest, an offsite contractor or a partnership with a local non-profit such as Sustainable Gardening in Durham.

Recommendation # 24: Revise the PACE scorecard to encourage food waste composting, either through a campus wide program or eatery organized programs.

3. Chemical Use

All of the 23 eateries use industry standard cleaning chemicals that contain potentially toxic chemicals. None had experience with using “green” cleaning solutions.

Recommendation # 25: Duke should investigate commercially available non-toxic cleaning solutions and determine if it would be more appropriate to require their use or modify the PACE scorecard to encourage their use.

4. Energy Consumption

One in three eateries identified a situation where energy is being wasted. In most cases, the energy was being lost through inefficient refrigerators and freezers or because building controls could not be adjusted appropriately. For example, in the Faculty Commons, the icemaker is twice as large as needed, using electricity to keep cool unneeded ice. At the Loop, the kitchen lights are never turned off because the switch is not inside the restaurant.

Because eatery owners pay Duke a set fee to cover facilities and utilities, energy savings accrue to the University, not eatery owners. Therefore, little incentive exists for eateries to manage their energy use efficiently or purchase appliances that are environmentally friendly. As none of the eateries are sub-metered, verifying energy conservation in order to pass savings on to the eatery managers will be difficult.

Duke Dining owns and maintains some equipment in the eateries, but other equipment is owned by individual eateries. Duke Dining currently has a program in place to evaluate for replacement all of the appliances it owns that are over 7 years old. It is not clear that Duke Dining always chooses ENERGY STAR certified equipment when purchasing new equipment.

Recommendation # 26: An inventory of all appliances and walk-in coolers owned by Duke Dining should be conducted to find opportunities for power savings.

Recommendation # 27: As a matter of policy, the EPA’s ENERGY STAR program should be used to identify replacement equipment models.

Procurement Services and the Office of the Executive Vice President are currently drafting a campus-wide ENERGY STAR compliance policy.

Recommendation # 28: Revise the PACE scorecard to reward eateries that implement energy conserving practices.

Recommendation # 29: Duke should develop or adopt high performance design and renovation guidelines for kitchens, service areas and dining facilities on campus.

5. Consumer Education

No on-campus eateries were found to be effectively communicating the environmental benefits or impacts of their operations to customers. Information about the environmental benefits of organic and shade-grown coffee was sparsely available at a few eateries. Cosmic Cantina, an off-campus eatery whose products are served through the Chic-fil-A concession labels its burritos to indicate that they use organic beans, rice and free range chicken. In general, the lack of information available to customers is likely a result of the lack of information available to eatery managers, as discussed in Section 1A.

Recommendation # 30: Revise the PACE scorecard to encourage eateries to relate the environmental benefits and impacts of their operations to their customers. This will be most effective if a campus wide educational program is coordinated by someone in Dining Services.

As a result of this inventory, Duke Dining Services is in the process of hiring a full time green dining and quality control position to facilitate this process.

Recommendation #31: Conduct an annual student survey to measure the environmental literacy of students with regards to food.

As a result of this inventory, this duty has been adopted by Duke's Education & Communication Coordinator for Environmental Sustainability.

Recommendation # 32: Institute a monetary/non-monetary awards program to publicly recognize eateries that exemplify sustainable dining and/or carry out innovative programs in this area.

Recommendation # 33: Make every attempt to publicize positive environmental performance to campus, local, and national media and share Duke's experience with other institutions.

Lessons Learned

Managing environmental impacts in dining services is currently far outside the experience of our eatery managers and staff. While most eatery managers were sincere in their willingness to try new things and participate in Duke's green dining initiative, few of them had previous experience implementing the green dining practices referred to in the interview questions. This is an important lesson, as it indicates that for Duke to build a successful green dining program it will need to provide a significant amount of training, material support and guidance. This lesson also figures heavily in the next lesson learned...

Greening Duke's eateries is going to be a slow process, requiring patience and sustained persistence. Because margins are slim in the restaurant business, managers will be anxious to implement too many changes at once. Incremental changes will allay fears that green dining will compromise profitability, while increasing managers' experience and confidence with these practices. However, to ensure that the process of incremental improvement does not stall, Duke must be vigilant in investigating further opportunities for improvement and guiding eatery managers to them.

Developing trusting relationships between Duke and local farmers will be essential to achieving the adoption of locally farmed ingredients. Managers expressed some concerns about using local suppliers, including dependability of quality and delivery. Local farmers have expressed an eagerness to supply Duke eateries but are wary about becoming dependent on Duke as a large percentage of their production would be going to one customer.

From the experiences shared at the Second National Farm to Cafeteria Conference held at Kenyon College in June of 2005, Duke knows these obstacles can be overcome to develop meaningful and productive collaborations between local farmers and campus eateries. However, most other schools run their dining services in-house or through a single concession with one management company. This means that farmers have a single point of contact for all the kitchens on campus. Duke will only be able to replicate that single point of contact by hiring a Green Dining Coordinator to facilitate communication and resolve disagreements between eateries and local farmers.

The bottom line rules. Not unexpectedly, measures shown to save the eatery money received a favorable response from managers, in almost every case. Measures that would cost the eateries more money, or were *perceived* to cost more, regularly drew objections from managers. The University will have to think creatively about how to reduce the cost of green dining programs that will produce a dramatic reduction in environmental impact but will necessarily come at a premium.

Opportunities for Further Study

Throughout the recommendations above, a number of areas needing further investigation and research were noted. Here are some additional opportunities for further inquiry:

This study focused on campus dining locations that are physically located on campus. A full life cycle assessment of food consumed at Duke will also consider restaurants that deliver to Duke students and staff from off-campus. Duke Dining has some influence over these establishments and their practices because they are part of the "Merchants on Points" program that allows students to charge delivery meals to their meal plan. There are currently twelve eateries participating in "Merchants on Points."

In the future, Duke may want to perform a similar analysis of eateries that operate at Duke but independently from Duke Dining Services; this includes operations located within the Duke Medical Center and Hospitals.

It was beyond the time constraints of this study to precisely measure the quantities of waste, recyclables, chemicals and food that flow through Duke eateries. However, methodology for measuring or at least approximating these quantities eatery-by-eatery would be highly useful for identifying areas needing improvement and measuring progress.

Much more rigorous research needs to be conducted to investigate the full life-cycle impacts of many operational choices our eatery managers must weigh. For example, is it better to buy an organically grown ingredient from California and have it shipped to North Carolina than to buy that ingredient from a local but conventionally cultivated farm? A 2005 study of the United Kingdom's food production and distribution system found that buying locally-produced but conventionally farmed food generally had a lower environmental impact than buying food grown organically but trucked long distances when the full life-cycle was taken into account. (Pretty et al.) It is reasonable to believe that this is also true for food production and distribution in North Carolina, but no one can be sure until the analysis has been conducted.

Finally, it is recommended that Dining Services plan ahead for the construction of new eatery facilities to maximize environmental benefit. With eatery additions and renovations occurring regularly, Duke should invest time in developing or adopting high performance design guidelines to direct the design of renovations and additions.

References

1. Saphire, David. *Getting an "A" at Lunch: Smart Strategies to Reduce Waste in Campus Dining*. INFORM, 1998, page 24. <http://www.p2pays.org/ref/04/03993.pdf>
2. Pretty, J.N., A.S. Ball, T. Lang and J.I.L. Morison. "Farm costs and food miles: An assessment of the full cost of the UK weekly food basket." *Food Policy*, Volume 30, Issue 1, February 2005, Pages 1-19.

Appendix A - Campus Eateries

Name	Description	Operator	Annual Meals
Alpine Atrium	Coffee and smoothie shop	Alpine Bagels	212,500
Alpine Bagels	Bagel and sandwich shop	Alpine Bagels	395,100
Armadillo Grill	Sit-down location with Mexican fare.	Armadillo Grill	170,700
Blue Devil Beanery	Coffee and pastry shop serving Starbucks coffee.	Alpine Bagels	128,700
Blue Express	Entrée-style menu served cafeteria style.	Family business	170,400
Cafe at Duke Law	Sandwiches, salads and coffee	Local caterer	57,500
Chick-Fil-A	Serves fast food and Cosmic Cantina burritos	ARAMARK	157,200
Faculty Commons	Serves buffet meals to faculty members, and students by faculty invitation only	Local caterer	24,700
The Fairview	High-end restaurant at the Washington Duke Inn	Inn management	
Grace's Café	Serves Asian cuisine. A significant portion of sales is through delivery to dorms.	Family business	59,400
Great Hall	Large cafeteria style dining hall.	ARAMARK	398,900
The Loop	Sit-down grill featuring burgers, salads and shakes.	Small franchiser	201,000
Marketplace	Cafeteria style dining hall on Freshman campus.	ARAMARK	486,100
McDonald's	Serves fast food fare.	Small franchiser	241,800
Pauly Dogs	Hot dog cart located on West Campus walkway.	Family business	27,300
The Perk	Coffee shop located in Perkins Library.	Alpine Bagels	64,500
Quenchers	Smoothie bar in Wilson Gym.	Family business	96,500
Rick's Diner	24 hour diner.	Local business	115,100
Sanford Deli	Serves sandwiches and salads at breakfast and lunch.	Alpine Bagels	52,900
Subway	Fast food subs.	ARAMARK	108,600
Terrace Café	Sells snacks and sandwiches in the Duke Gardens. All food prepared offsite.	Local caterer	9,500
Trinity Café	Coffee and pastry shop.	ARAMARK	98,300
Twinnie's Café	Sandwich and coffee shop (open for 7 months)	Family business	35,200

Appendix B - Interview Questions

Normalization Questions
<p>How many meals do you serve a day? What is your average meal price? Is your menu a-la-carte or all-you-can-eat? Are the majority of your customers undergraduates, graduates, faculty or staff? What is your annual revenue? What type of eatery is this? Deli? Restaurant? Café? Fast-food franchise? Cafeteria?</p>
Food & Suppliers
<p>Where do you usually buy your food and supplies? Do you currently buy from any local or organic producers? If so, what do you buy from whom? How is it working out in terms of quality, price and reliability? If not, have you ever tried local or organic producers? Why/why not? Do you serve seafood? Do you use any sustainable seafood guide? Do you serve coffee? Is it organic? Shade-grown? Fair trade? Locally roasted?</p>
Non-Food Waste
<p>What is your kitchen's capacity to wash dishes? Do you use reusable (washable) plates and dishware on a regular basis? Have you ever given customers a discount for bringing in their own cups or plates? If so, was the program used? Is it still in use? If not, would you consider it? What are your plates made out of? What price do you pay? Can I have a sample? What are your cups made out of? What price do you pay? Can I have a sample? What are your napkins made of? Are they bleached? Price? Do you use reusable coffee filters, or throwaways? Have you ever tried recyclable/biodegradable products? What has been your experience? What is currently recycled? Behind the kitchen? In the customer area? Where are your recycling bins located? Are they emptied by you or housekeeping?</p>
Food Waste
<p>Do you donate leftover food to a food bank? If yes, how much do you donate? If no, would you consider donating? Would you be interested in joining a University-wide compost program? What do you do with waste grease?</p>
Energy
<p>Do you know which appliances use the most energy? Do you currently implement any energy conserving practices? Have you heard of ENERGY STAR? Do you have any ideas for ways to save energy in your eatery?</p>
Chemicals
<p>What chemicals are used for cleaning? Have you ever tried chemicals marketed as environmentally friendly? How was your experience?</p>
<p>Are there any additional things you are doing for the environment that I should know about?</p>