Sustainable Student Dining

Danielle Caputo, Russell Wagner, Jennifer Tirella

ES 600 - Environmental Studies Capstone

May 11, 2014

1. Introduction

Our project is the product of an undergraduate food sustainability capstone led by Holly Gibbs for the UW Madison Nelson Institute for Environmental Studies. Our hope is to educate our community about the variety of sustainable dining options that are available on campus. There is currently a gap in information about the location, knowledge of food sustainability, and specific benefits from campus eateries that can be accessed in one place. After looking at food guides from other campuses, and finding that the UW Madison campus does not have one, we found it imperative to investigate our campus' dining options and create something that can connect students to their food choices. We decided to implement our findings in a user-friendly, familiar map interface in order to make information about menu items and food sustainability more accessible to students. We hope this map helps the campus community make more sustainable food choices in the future.

2. Project Goals and Objectives

Throughout this project, our ultimate goal was to inform the student body about dining options on campus. In order to achieve this goal, we have created a map that is familiar, user-friendly and can connect to the locations, menu, and food sustainability aspects that students want to know. Our objective was to investigate all dining options and consumer purchase behavior on campus through a survey given to managers, in-person visits, and observing menu options. After gathering this information, we implemented our findings by formulating the Green Dining Map to provide students with a better understanding of dining on campus. Additionally, our goal is to change the way students think about and purchase food. We believe that with better education and awareness of food choices and dining options on campus, students will be able to make a more informed decision about their food purchases. Focusing on food sustainability will encourage students to investigate the importance of their food purchases and think more sustainably when eating. Looking forward, we believe investigating consumer purchases and educating students will influence the way the Wisconsin Union and University Housing purchases food and can lead them to become more sustainable. Changing student food purchases can empower restaurants to demand more local and vegetarian products for their menu.

3. - **Background Information**

Our concern for food sustainability on campus is derived from global food sustainability issues. Looking at global eating habits, approximately 30% of the world's total ice-free surface is used to

support chickens, pigs, and cattle that are intended for human consumption. (Herrero 2013). Every year, 285 million tons of meat are produced throughout the world, or about 42 kg (93 lb.) per person, but Americans eat 120 kg (265 lb.) of meat a year on average, while Bangladeshis eat 4 kg (9 lb) per year (Barclay 2014). There are several problems with a diet containing large amounts of meat. First, cows produce a by-product called methane gas, which is a potent greenhouse gas that can drastically affect the climate, global warming, ecosystems, and more. In addition, the production of livestock is not efficient as it takes at least 75 kg of grain to produce one kg of protein in a cow. That means we expend an additional 74 kg of food on livestock production instead of feeding ourselves. If we cut back our meat consumption, we would reduce methane emissions, use less land for food production, and be able to feed more people more efficiently. Since meat consumption is a huge concern worldwide, we hope that our efforts to lower meat consumption here on campus will be successful.

Before we investigated individual restaurants for food sustainability on campus, we looked into economic expenditure by the university as a whole. Around $15.5 million is spent on food for University of Wisconsin affiliated dining locations with $7.8 million on housing, $6.4 on the unions, and $1.3 million spent on sports and catering. Currently, the Wisconsin Unions have 18 cafes/markets, 7 restaurants, and catering it needs to supply food for. Eighty percent of food spending is through one primary vendor, Martin Bros. Local foods make up 23 percent of all food purchased and most local purchases are breads/bakery items, grass-fed beef for housing, Wisconsin cheese and dairy, and fresh produce supplied by V. Marchese Inc. It is evident through these financials that food supply plays a huge role in campus operations (Korz 2013).

4. Research Information on Similar Projects

We reviewed a number of systems that other schools have used to influence their food purchases, composting programs, student education, and overall sustainability on campus. Three of the main schools that we looked at were Cornell University, Duke University, and the University of British Columbia (UBC 2014). Cornell has 25 separate initiatives just surrounding food on campus (Cornell 2014). These initiatives include composting programs, local food sourcing, waste reduction, reusable kitchenware, and education for both the public and their students. Duke also has a number of initiatives in place, many of which are part of their food system. One thing that stood out at Duke was their ‘Green Dining Award’ (Duke 2014). They have created a scorecard that judges eateries on their campus to determine which restaurants excel in providing sustainable dining. There are a number of criteria, including local food, vegetarian options, fairtrade coffee, and energy-saving practices. Local food is prioritized at Duke, and they chose a food vendor that purchases 25% local and organic food at Duke as well as grow food at community gardens on campus. Furthermore, UBC has a very comprehensive sustainable food guide (UBC 2014). The UBC food guide is meant to educate people on how to eat sustainably. The guide includes when certain foods are in season, encourages eating locally, provides

information about every eatery on their campus, what happens with food waste after your meal (in terms of recycling and post-consumer composting), and how to get involved with food sustainability on campus.

Each of these university campuses have similar approaches to addressing food sustainability. Collectively, these campuses all have a specific resource for viewing all information related to food sustainability such as a website. These resources each include an educational component as well. Part of each school's efforts are to educate and engage their students and community about what eating sustainably means and how to do it through student groups and informational resources. In addition, many universities offer a food map that acknowledges sustainability surrounding campus eateries. A few other campuses that we looked at had some excellent dining maps. The University of California-Davis map illustrates many sustainable options on campus including food, buildings, energy, and transportation in a coherent and aesthetically pleasing way. This map allows viewers to look at one specific sustainability aspect of their campus at a time, preventing the map from getting too cluttered. (UC Davis 2014). The Sacramento State dining map is a static map providing the locations of eateries with a short description for each eatery below the map (University Enterprises Inc. 2014). The descriptions provided by Sacramento State told us what types of food could be found at each location, but they did not tell us anything about sustainability. From these examples, we decided that a short description for each campus eatery would be an ideal way to highlight the sustainable aspects of eateries on our own campus.

Each of these sustainability sites and eatery maps provides detailed information for students. After researching these other campus food maps, we decided that a campus map showing sustainable dining options would contribute significantly to the understanding and interest of UW students. We believe there is a major gap between consumption and knowledge of food sustainability on campus and creating this map is an easy and direct way to capture students' attention and encourage them to investigate their food decisions more carefully.

5. Our Progress

Before we could execute our student food map, we needed to gather all possible information from dining eateries on campus. In order to do this, we have collected information on menu options, operations, and recycling/composting available at each eatery by physically visiting a total of 43 places ourselves. We also prepared a Qualtrics survey, for each restaurant manager to fill out, which had gone through several revisions and a peer review. We had hoped that the survey could help us determine specific quantities and percentages that is normally difficult to determine on our own through in-person visits. For example, we wanted to find direct percentages for local food and consistency of vegetarian meals in order to determine the level of sustainability for our symbol's system. We emailed our survey twice to all of the managers of the Wisconsin Union eateries. We also sent the survey to Aldo's Cafe

and Rheta's Marketplace since we were provided the email addresses of the managers at these locations. Unfortunately, we only received nine total responses which includes Aldo's cafe, Rheta's, and seven responses from the Wisconsin Union eateries. The response rate to our surveys was not what we had hoped it would be, especially since restaurant managers only benefitted from providing us with their eatery information. This survey can be of great use for further information about restaurant sustainability.

In addition to our surveys and in-person visits, we evaluated consumer purchase data obtained from the Wisconsin Union to get a baseline for consumer sustainability. Using this data, we began to analyze the meal purchases. Due to constraints in both time and data, we have narrowed down the data to focus only on purchases concerning entrees, soups, salads, and sandwiches. We believe these are the most important categories when it comes to food sustainability as these options are the main menu items at each restaurant. We decided to analyze consumer purchasing behavior for 354 items, accounting for $3,488,744.57 in purchases that cover many entree options available from Wisconsin Union-affiliated eateries during 2013. Of these items, 139 are vegetarian options, and 215 contain meat products. We found that 79.8% of consumer food purchases that we analyzed contained meat, as opposed to 20.2% which were meatless (Appendix:Consumer Purchase Data 2013). Even with a substantial number of vegetarian options offered on campus, most consumer purchasing decisions include meat. Publicizing this information is a great way to inform students and school personnel about the results of their dining behavior and encourages more transparency about sustainability and dining on campus.

Initially, we determined a list of criteria on food sustainability after looking at Duke University's rating system and other universities' systems. We narrowed our focus down to food and waste management at each location because they directly impact food sustainability within restaurants. We specifically chose these categories because of our limited time and capabilities. For food, the eateries are evaluated on what percentage of their menu entrees are local, vegetarian, and whether they offer any fairtrade items. For waste, the eateries are rated on whether their location practices post-consumer composting, encourages reusable dishware, provides recycling, and offers a reusable mug discount.

We decided to take a different path from Duke's rating system and a five-point system to minimize any subjectivity and bias on our part. Instead of mimicking their current system, which weighed different components based on how many points they achieved, we formulated a new system to determine what sustainable actions we should track and create symbols for. We believe eliminating any point system or five-star system will remove any confusion about our application. On the map, each eatery will receive a specific symbol following a set of criteria we created based on survey responses and our in-person visits. The symbols will identify eateries that meet our criteria for each of the following: local food, fairtrade, vegetarian, composting, recycling, reusable kitchenware(plates, cups,

utensils, etc.), and reusable mug discount. We believe our current system is an achievable and realistic guide for managers to follow. The criteria for each symbol is:

GREEN DINING METRIC TABLE:

Symbols	Criteria	Targets/metrics	Of Total # of Eateries
	Food Attributes and Origins		
	Local food	25% or more of menu options	51.2%
	Fairtrade Coffee	Yes	72.1%
	Vegetarian Options	25% or more of menu options	44.2%
	Waste Management		
	Composting	Post-consumer	39.5%
	Recycling	Post-consumer	83.7%
	Reusable Kitchenware	Any of these: Dishware/Cups/Silverware/Napkins	44.2%
	Reusable Mug Discount	Yes	58.1%
	Total # of Eateries		43

In the table above, we have also listed what percentage of campus eateries provide each of the sustainable options represented by each symbol.

Our main deliverable consists of an interactive map that students can utilize for dining locations, guidance on purchasing decisions, and sustainability options at eateries around campus. The map shows all UW Campus eateries including Union-affiliated eateries (Union South, Memorial Union, the Badger Markets and Cafes...), the Dining Halls, Slow Food Cafe at the Crossing Church, and Library Mall where F.H. King hands out seasonal produce. We also included other non-UW affiliated restaurants that are located on campus such as CoffeeBytes, QQ Express, Subway, Buffalo Wild Wings, and Milios. All of these food providers are located on the final map with symbols representing their aspects related to food sustainability and a description of more information about their offerings. The map was

made to look similar to the UW Campus map so students are familiar with it aesthetically and can easily navigate the user-interface. The map contains multiple layers of information. The dots on the map represent the locations of each eatery with their name, address, achieved symbols, and more info tab. In addition there is a "More Info" page, description of symbols, and information about this project in our "About Us" page. Look at our screenshot in the Appendix to get a better understanding of these dimensions.

After consulting people in restaurants and around campus, we learned everyone has a slightly different definition of our sustainability terms above. Some people have never heard of composting or the reusable mug program, which is especially unfortunate considering all badger markets and cafes on campus provide discounts for reusing personal mugs. We realized for customers to make a well-informed decision about their food choices, they should be provided with as much information as possible. In our map, we have included a page called, "What do these symbols mean?", defining our listed sustainability terms and simple descriptions about why each restaurant was given this symbol. After looking at a variety of definitions on the internet and our own personal research, we believe they are informative and easy to understand. We hope these brief description will pique students' interest in the topic and address any confusion about differing opinions.

On our map, each restaurant also has a link to a "More Info" page that provides additional information about the location and sustainability practices. These descriptions were inspired by the Amazon reviews below each product name, which have a star rating acting as a link to customer reviews about each product. Personally, we have continually looked at these reviews and descriptions as a guiding tool for our own purchasing decisions. We found that more formal restaurant reviews by food critics were too long and subjective. Our goal was to format our "More Info" for each eatery in the likeness of these reviews, but make them more objective by eliminating our opinions and stating their positive aspects. We hope that including these descriptions will encourage students to investigate their food behavior and make more sustainable decisions.

After implementing all these features on the map, it has become a comprehensive guide for sustainable campus dining. Currently this map can be found on EatSmartUW's webpage and will be located on the Office of Sustainability's website in the near future.

6. Challenges and Obstacles

Major challenges we faced include analyzing the data from consumer purchases, menus, and research that will benefit this project. It was a daunting task sorting through all of the data from consumer purchases, given there are thousands of purchases that happen over the course of a year. With the help of our colleague Masrudy Omri, the data was sorted in a way that was easily understood. We decided to compare purchases of entrees with meat and entrees without meat to get an idea of

sustainable choices made by students. We defined entrees as the main meal or option served at that particular restaurant. This could include sandwiches, salads, hamburgers, etc. It was difficult to determine whether or not some of these items included meat or not because they were unlabeled or mislabeled in the data. Due to this, some indeterminable items were left out of our calculations.

Another area of difficulty we had was collecting information directly from restaurant's staff workers. We realized there is a gap between the knowledge of most of the staff and the information that we needed, such as whether any local foods were served, or where the food came from. It was difficult to gather information when staff members do not know what we are asking them or do not know the practices happening at their specific restaurants. Creating our survey was one way to attempt to eliminate this gap and attain more reliable information. Additionally, we had initially assumed that some people understand what sustainability or composting means, but we learned that people have different understandings of these terms; therefore, it was important to include explicit descriptions of these terms within our map.

Towards the end of our project, we have faced some obstacles when it came to the adoption of our map by the university. Although our group believes this map can greatly help and provide value for the university campus map, we have faced limitations with its integration. Due to the universities' restrictions, we have realized we needed to reformulate some of our work to be more objective. For example, we believed including a comments capability in our map would entice students to become more interactive and engaging with the map and the topic of sustainability. Allowing students to post restaurant reviews would encourage students to ask questions and look out for specific sustainability options located at each restaurant. However, this is very subjective and can impact a restaurant negatively so this option could not be incorporated into our final deliverable since our goal is for the UW to pick up our map. Although our goal to incorporate this map on the official UW campus map will not happen by the end of this semester, we are hopeful this will be an option in the future. For now, we have secured a place for our map on the Office of Sustainability website.

7. Recommendations

Collectively, we have learned a lot about communication, UW operations, and the difficulties of obtaining information. After realizing the direction of our group project, we believed that we could continue at an aggressive pace, but there are many components out of our hands. If one intends to send a survey and collect data by email, we recommend sending it immediately and expect a longer response time even after repeated emails, as it took us several weeks to achieve participation from less than half of our list of restaurants. Also with any project, adoption from the UW could become a legal issue. It is important to remember that your project might be very significant and informational to you, but it could take a long time to be implemented on campus. In the end, one's project should be complete and easily

accessible to campus. Making sure everything is universally understood in an objective manner is the best way to affirm a response from campus.

If one were to take over our current project and expand on it, there are several key areas for growth. Similar to the UC Davis Sustainability Map, including more aspects about sustainability around campus beyond dining will make the map even more dynamic and educational. In the future, we would suggest including the other areas of sustainability such as plastic bag recycling centers and receipt-free locations to the map. We further recommend that future studies in this area take into account all food purchases, including sides and snacks. We were unable to obtain consumer purchasing data for non-Wisconsin Union affiliated eateries, but it would be interesting to compare their purchase data with the data that we have utilized. Due to numerous constraints such as limited data and time, we were unable to locate exactly where each food item originated, but it could be helpful and informative to be able to analyze that data. In addition, we suggest expanding the locations on the map to include more restaurants around campus, especially those located on State Street. This will make the map more enticing and informative for students.

8. Conclusion

Our group, Sustainable Student Dining, has gathered information from eateries all over the University of Wisconsin campus by examining menus, surveying managers, and visiting the eateries in person. We were able to combine all of the data that we collected to form an interactive campus map, which shows the sustainable options available at each eatery. This map is meant for UW students and other campus members who desire to eat sustainably. We also examined consumer purchases for main dining items from Wisconsin Union eateries. Using this data, we were able to get an idea of how sustainable consumers are. Our purchasing calculations could be useful for any future comparisons as this was the first step towards investigating consumer behavior. We believe we have executed our project goals to the best of our ability. Student education remains the fundamental goal for us and we believe we have provided a valuable tool with our map. We are excited for the university to adopt this program and look forward to seeing it on the Office of Sustainability website.

References:

Barclay, Eliza. "A Nation Of Meat Eaters: See How It All Adds Up." *NPR*. NPR, 27 June 2012. Web. 22 Apr. 2014.

ChartsBin statistics collector team 2013, *Current Worldwide Annual Meat Consumption per capita*, ChartsBin.com, viewed 25th April, 2014, <http://chartsbin.com/view/12730>.

"Cornell University." *Cornell Sustainable Campus*. Cornell University, n.d. Web. 31 Mar. 2014.

"Duke." *Sustainability : Dining*. Duke University, n.d. Web. 31 Mar. 2014.

Herrero, M., P. Havlik, H. Valin, A. Notenbaert, M. C. Rufino, P. K. Thornton, M. Blummel, F. Weiss, D. Grace, and M. Obersteiner. "Biomass Use, Production, Feed Efficiencies, and Greenhouse Gas Emissions from Global Livestock Systems." *Proceedings of the National Academy of Sciences*110.52 (2013): 20888-0893.

Key, Timothy J., Gwyneth K. Davey, and Paul N. Appleby. "Health Benefits of a Vegetarian Diet." *Proceedings of the Nutritions Society* (1999): 271-75. Web. 22 Apr. 2014.

Korz, Carl. 2013, Oct 31. *SAGE Weston Seminar Series.* http://mediasite.engr.wisc.edu/Mediasite/Play/46f69be0ec3641c6b9a1ea67c41a214f1d?catalog=7b399ee9-5a21-4574-91e9-21a3fe66a51b

Livestock and Global Change Special Feature - Biological Sciences - Sustainability Science: Mario Herrero, Petr Havlík, Hugo Valin, An Notenbaert, Mariana C. Rufino, Philip K. Thornton, Michael Blümmel, Franz Weiss, Delia Grace, and Michael Obersteiner

Timothy J. Key, Gwyneth K. Davey and Paul N. Appleby (1999). Health benefits of a vegetarian diet. Proceedings of the Nutrition Society, 58, pp 271-275. doi:10.1017/S0029665199000373.

"UBC Sustainable Campus Food Guide." *Sustain.ubc.ca*. University of British Columbia, n.d. Web. 31 Mar. 2014.

"UC Davis: Sustainability Map." *UC Davis: Sustainability Map*. University of California Davis, 31 May 2013. Web. 31 Mar. 2014.

"University Enterprises, Inc." *Sac State Campus Dining Operated by University Enterprises Inc*. Sacramento State, n.d. Web. 31 Mar. 2014

Appendix:

**** These deliverables are pages found directly on the map website.**

Wisconsin Union consumer purchasing data:

Original spreadsheet:
https://drive.google.com/file/d/0B-9fQfMiM1fXWV9PeDJyclNyYTQ/edit?usp=sharing

Sorted spreadsheet:
https://docs.google.com/spreadsheets/d/1H_u_VecpTsA9o6wO493uCoWcSM3QytxcjS2AW2AnsOc/edit?usp=sharing

**"About" Page on Map:
https://docs.google.com/document/d/1FEG10rZ9QFTSFzXuNIJANx0YB4w-gr9ueAQNuVJCX8U/edit?usp=sharing

**Eateries "More Info" Page:
https://docs.google.com/document/d/1rr0whTQzOGMahzFjcssD3e8iN9lrT7MVLd82cZAzZ5w/edit?usp=sharing

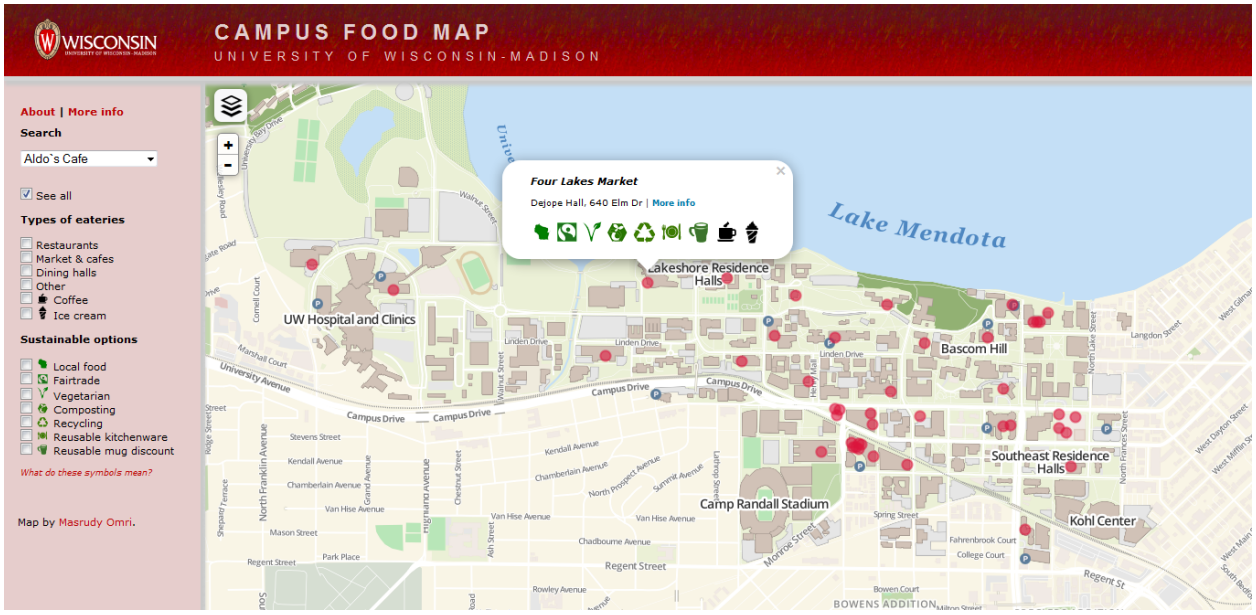
Survey to eatery managers: https://uwmadison.qualtrics.com/SE/?SID=SV_4VqO8aqDzSD84mx
Additional Survey link:
https://docs.google.com/document/d/1E6BACZNHQ19SB1nmN7tVPqPljTtP6O3CMKF340aPf-M/edit#

Map Information (eatery locations and symbols):
https://docs.google.com/spreadsheet/ccc?key=0Au9fQfMiM1fXdGthRGtQaV9ka1Rpb2M1Q2lWNkUzMlE&usp=sharing

UW Union Eateries' consumer options:
https://docs.google.com/spreadsheet/ccc?key=0Au9fQfMiM1fXdFVyakxOR244TUlmd09HeGtncDZ2LXc&usp=sharing

**Symbol Descriptions:
https://docs.google.com/document/d/1zUvFyApeBOLohruLTAeGgSrX7sbmQ0ZZ0kgXvYJs91k/edit?usp=sharing

Our current UW Madison Green Dining Map:
https://mywebspace.wisc.edu/omri/campusfoodmap/index.html



Scorecard used now as a Checklist:
(current scorecard is included in paper)

GREEN DINING SCORECARD FOR RESTAURANTS		
Criteria	Targets/metrics	Possible Points
Food Attributes and Origins		
Local food (in Wisconsin and within 150 mi)	% of food options	10
Food Alliance and/or Organic Certified food	% of food options	6
Provide Fair Trade Coffee	yes (2), no (0)	2
Provide vegetarian options	% of food options	3
Provide vegan options	% of food options	2
Waste and Recycling		
Composting	preconsumer(2), postconsumer (2)	4
Recycling	preconsumer(2), postconsumer (2)	4
Offer reusables	dishware(1), cups(1), silverware (1), napkins(1)	4
Encourage reusable mug program	Offered(1), Incentive(1)	2
Signage	Reusable mug program(1), composting(1), Recycling (1), Sustainable food posted in restaurant (1), Sustainable food advertised on menu(1)	5
Total Points		42

GREEN DINING SCORECARD FOR RESTAURANTS		
Criteria	Targets/metrics	Five-star point system
Food Attributes and Origins		
Local food (in Wisconsin and within 150 mi)	% of food options	
Food Alliance and/or Organic Certified food	% of food options	
Provide Fair Trade Coffee	yes, no	
Provide vegetarian options	% of food options	
Provide vegan options	% of food options	
Waste and Recycling		
Composting	preconsumer and postconsumer	
Recycling	preconsumer, postconsumer	
Offer reusables	dishware, cups, silverware, napkins	
Encourage reusable mug program	Offered, Incentive	
Signage	Reusable mug program, composting, Recycling, Sustainable food posted in restaurant, Sustainable food advertised on menu	
Total		*****

Contacts:
Contact the team for any questions or more information about our project!

The Team

Contact:	Major	Email
Jen Tirella	Economics (with math emphasis) and Environmental Studies	jentirella@aol.com
Danielle Caputo	Marketing and Environmental Studies	dcaputo515@gmail.com
Russell Wagner	Community and Environmental Sociology with a Certificate in Environmental Studies	rcwagner@uwalumni.com

Masrudy Omri	Cartographer	masrudyomri@gmail.com

Contacts familiar with the Green Dining Map

Contact:	Department	Email
Holly Gibbs	Nelson Institute of Environmental Studies & Geography	hkgibbs@wisc.edu
Tyler Lark	Center for Sustainability and the Global Environment	lark@wisc.edu
Jill Sakai	Office of Sustainability	jasakai@wisc.edu

Department contacts:

Contact:	Department	Email
Carl Korz	Wisconsin Union	ckorz@wisc.edu
Nick Weaver	University Communications	jnweaver@wisc.edu
Kelly O'Loughlin	Marketing Director at the Wisconsin Union	koloughlin@wisc.edu

Joel Ninmann	Marketing Specialist at UW Madison University Housing	joel.ninmann@housing.wisc.edu