

# Sustainable Campus Dining

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## How Campuses are Targeting Sustainability and Engagement through Dining Services Initiatives

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**Williams College**

Sustainable food and dining is a popular topic on college and university campuses. Popular areas of focus include equipment upgrades in the kitchen, installation of campus or community gardens, and streamlining existing campus recycling operations, such as by converting campus vehicles to run on used vegetable oil from the dining hall. Research shows that these types of projects are ideal funding candidates inside the green revolving fund model as they coincide with the fund's common goals of reducing resource use and engaging the community. Though these projects have remained largely untapped by financing through green revolving funds, this white paper examines both the successes and obstacles of financing food service and education programs through the green revolving fund model on eight campuses in the United States.

## Introduction

Food and dining garners much attention on college campuses, uniting students, administrators, and dining services staff. There is a growing interest among these stakeholders to know who grew their food and how far it traveled before reaching the dining hall. However, beyond the procurement of local, organic, and fair-trade certified food, there are a variety of food service initiatives that can both produce monetary savings and reduce a campus' resource use. Dining services can operate more sustainably in a variety of ways, and some schools have begun to explore these new initiatives by providing funds specifically for sustainability projects.

For the purposes of this research paper, we have divided food and dining initiatives into three categories: dining service initiatives, kitchen retrofits and upgrades, and campus and community garden work.

## On the Ground and in the Kitchen: Sustainable Projects on College Campuses

Sustainable dining services projects seek to improve operations in campus kitchens and dining halls. Projects include creating a composting system, retrofitting kitchen equipment, or converting campus tractors to run on recycled vegetable oil from meals served in the dining hall; all of these projects can have quantifiable resource and cost savings and relatively short payback periods. While engaging with the campus community is not always the primary focus of dining services, they can encourage behavior changes in staff and students. Outreach efforts such as posters or flyers can help explain programs including trayless dining or a new composting system, producing both reductions in resource use and increased campus awareness of sustainability initiatives. Though the following initiatives vary in scale, they all share the common goal of reducing operating costs through adopting more sustainable practices.

<b>Name of institution</b>	Iowa State University
<b>Location</b>	Ames, IA
<b>Full-time student enrollment</b>	31,040 students
<b>Endowment size</b>	\$604.9 million
<b>Green revolving fund (GRF)</b>	Live Green! Revolving Loan Fund
<b>Size of fund</b>	\$1,000,000

With total enrollment over 30,000 students, Iowa State University uses a tremendous amount of food. Disposal of the pre- and post-consumer waste generated through such large-scale food consumption

became an issue for the campus in the spring of 2009 when ISU Dining Services learned that sending food scraps through the garbage disposal could result in fines from the City of Ames water treatment plant. To avoid the additional cost (estimated at \$9,000 per year) ISU Dining Services decided to install a compost system that would process and divert compostable food waste.<sup>1</sup> To finance the project, Dining Services and Facilities Planning and Management applied for a loan through ISU's Live Green! Revolving Loan Fund to create the Dining Compost Initiative.

The Dining Compost Initiative became operational in the fall of 2009, having received a \$45,000 in loan because of its ability to demonstrate quantifiable cost savings and meet a payback period requirement of 5 years.<sup>2</sup> After the first three years of operation, Merry Rankin, Iowa State's Director of Sustainability, noted that Dining Services has been able to avoid potential disposal surcharges and has begun to repay its loan back to the fund.<sup>3</sup>

For other universities facing similar disposal challenges, installing equipment and exploring systems to collect pre- and post- consumer food waste can be an investment that reduces landfill and water treatment costs while also reducing a campus' environmental impact.



*Pictured above, Iowa State University stores the finished compost product from campus dining halls in one of school's hoop buildings.*

For projects involving community participation and awareness, it is important to account for the cost of such educational campaigns during the project development stage. At ISU, brightly colored posters in the dining halls vividly displayed before-and-after results of an October 2008 Food Waste Campaign, helping students discern which waste items could be composted. Students within ISU Dining Services made T-shirts with featuring slogans such as "Compost Happens" to inform other students that their food waste would become a "usable product" at ISU's composting facility.<sup>4</sup> The impacts that such a marketing campaign have on waste reduction, while likely significant, are difficult to track directly; more

research of best practices is needed in this area. However, using GRF capital to finance an accompanying educational component still generates ongoing savings, even though it is harder to track direct project payback.



*Food waste product from the ISU campus is deposited at a university compost facility.*

“Not only do you have to get students to buy into these initiatives, you have to get staff to fully participate as well,” said Nancy Levandowski, Director of Dining Services at ISU. Levandowski stressed the importance of getting staff on board because they are the ones performing necessary tasks behind-the-scenes.<sup>5</sup>

#### *Carleton College’s Compost Pulper*

<b>Name of institution</b>	Carleton College
<b>Location</b>	Northfield, MN
<b>Full-time student enrollment</b>	1,958 students
<b>Endowment size</b>	\$645.6 million
<b>GRF</b>	Sustainability Revolving Fund
<b>Size of fund</b>	\$79,600

For those campuses that already conduct their own composting, GRF financing can support greater investments in the efficiency of those initiatives. Martha Larson, Manager of Campus Energy and Sustainability at Carleton College, stated that obtaining a pulper is a great potential project for the

college's Sustainability Loan Fund, as its ability to pulverize food waste beforehand can reduce the operating costs and time required for composting.

"A pulper makes compost less messy," noted Larson. "Highway drips can cause fines and during the winter watery compost freezes to the bottom of the collection container." <sup>6</sup>

#### *Carleton College Conducts a Dining Hall Energy Audit*

Taking an inventory of energy and resource use in the kitchen can also be an investment for the GRF.

"I would want about a year of baseline data of just dining, I would want meters on just the dining equipment circuits and lighting," said Larson.

Carleton's two dining halls are in the basement of an academic building and the bottom floor of a residence hall. Larson said that a subsequent approach would be to conduct "energy audits of the dining facilities as their own group, because there would be similarities in water and energy saving measures in both places."<sup>7</sup> Developing a metric of energy and water usage in food service operations is a valuable tool for prioritizing future upgrades and retrofits.

A loan from the GRF can finance the equipment and labor required to meter the water and energy used by different kitchen appliances, with the resulting data revealing which upgrades and retrofits would be most cost-effective. Larson also noted that sub-metering at the panel level would provide an accurate picture of resource use that is only attributable to operations inside dining services.

#### *Reusable Food Containers at Oberlin College and Dartmouth College*

<b>Name of institution</b>	Oberlin College
<b>Location</b>	Oberlin, OH
<b>Full-time student enrollment</b>	2,900 students
<b>Endowment size</b>	\$689.9 million
<b>GRF</b>	Oberlin College Green EDGE Fund
<b>Size of fund</b>	\$90,000

Small projects that promote behavioral shifts in the dining halls can have a large environmental and financial impact. Noel Meyers, student co-chair of Oberlin's Green EDGE Fund, has overseen approximately 20 projects during his two years on the EDGE Fund Committee.<sup>8</sup>

"We have funded a fair amount of projects that Dining Services has approached us with," said Meyers.

The Green EDGE Fund gave the campus group Campus Dining Services Recyclers \$7,000 to purchase reusable food containers for Dascomb Dining Hall.<sup>9</sup> Dascomb is known on campus as a dining hall that allows students to take their food to go. Eliminating disposable to-go containers reduces packaging, saving Dining Services money and reducing the amount of waste generated by students. Similarly, eliminating bottled water by using the GRF to invest in water filters and reusable bottles ultimately creates cost savings due to the high cost of bottled-water.

#### *Dartmouth College's Reusable Water Bottle Sale*

<b>Name of institution</b>	Dartmouth College
<b>Location</b>	Hanover, NH
<b>Full-time student enrollment</b>	6,144 students
<b>Endowment size</b>	\$3.49 billion
<b>GRF</b>	Dartmouth Green Revolving Fund
<b>Size of fund</b>	\$1,000,000

At Dartmouth, students are also looking towards reusable containers. Stephanie Gardner, a former Dartmouth student who co-established the college's green revolving fund, worked on a reusable water bottle event during her senior year.<sup>10</sup> One weeknight, Gardner, in collaboration with the campus environmental group ECO, sold reusable water bottles to students and staff in the main dining hall's foyer during dinner hours. Before the event, ECO purchased 100 water bottles for a total of \$850, and with Dartmouth Environmental and Health Services subsidizing half the cost, students could purchase the bottles for an affordable five dollars. The event also featured a PowerPoint presentation that depicted the environmental and monetary benefits of drinking tap water as opposed to bottled water.<sup>11</sup>

"The bottle will pay for itself in only three uses," proclaimed the final slide, prepared by ECO. "And you will be healthy, wealthy, and green."

ECO had no trouble selling the 100 water bottles at the event, which was part of the kick off for the intercollegiate national recycling competition, Recyclemania. To finance other Recyclemania initiatives, Gardner had to apply for funding from various sources on campus, a reality that Gardner said would have been easier had there been one main funding source for financing sustainability projects.<sup>12</sup>

"I really had to try to pull together funds from a whole bunch of different places, so I think that the Community Fund [a component of Dartmouth's GRF] is going to be an awesome resource for groups like Ecovores and ECO," said Gardner. "It would have been a game-changer for my group."

*Harvard University on Food Waste & Energy Audits*

<b>Name of institution</b>	Harvard University
<b>Location</b>	Cambridge, MA
<b>Full-time student enrollment</b>	21,225 students
<b>Endowment size</b>	\$30.4 billion
<b>GRF</b>	Harvard Green Loan Fund
<b>Size of fund</b>	\$12,000,000

Harvard University seeks to reduce its food waste through strategic sustainability initiatives.

“One thing Dining Services has been hoping to do for a while is look more critically at the back-of-the-house waste,” said Louisa Denison, the Food Literacy Project Program Coordinator at Harvard University. According to Denison, it is critical to develop a metric of how much prepared food Dining Services discards after each meal and how much waste is generated by students.<sup>13</sup>

“Some of the auditing tools out there have employees weighing and categorizing every type of waste that is produced,” said Denison.

Though time-consuming, Denison said that the data collected helps provide information about how the campus should reduce its waste and realize cost savings. For Harvard, future strategies to save resources may include more batch cooking, or making less food available towards the end of the mealtime.

To further their efforts, Harvard Dining Services could also include an educational component for staff and students as part of an initiative to reduce food waste.<sup>14</sup>

“Dining Services would ultimately save money because they would not need to haul away as much food. And of course, this would be the more sustainable option because there wouldn’t be as much food waste to begin with,” said Denison.

**Kitchen Retrofits and Upgrades**

Commercial kitchens use a tremendous amount of energy and water. Many colleges and universities conduct retrofits and upgrades to kitchen equipment in order to curb resource use and achieve monetary savings, and the GRF model can be a good source of funding for these capital-intensive projects.

Harvard University, for example, has invested about \$922,000 in 17 kitchen equipment upgrades and replacements across the university's multiple dining locations. The funding for these upgrades came directly from Harvard's Green Loan Fund, and to date the projects have recorded an average simple payback of 3.7 years and a 28 percent average return on investment.<sup>15</sup> Jennifer Stacy, Coordinator of Business and Finance at Harvard's Office for Sustainability, stated that such a financing mechanism presents an opportunity to develop similar projects if a department cannot afford the initial purchase.<sup>16</sup>

*Table 1. A selection of dining projects financed by Harvard's Green Loan Fund*

<b>Project</b>	<b>Cost</b>	<b>Loan</b>	<b>Annual Savings</b>	<b>Simple Payback</b>	<b>ROI</b>
Cronkhite Center walk-in refrigerator upgrade	\$19,716	\$19,716	\$4,574	4.3	23%
Annenberg student dining hall dishwasher replacement	\$86,015	\$83,800	\$29,978	2.8	36%
Air Solutions Intelli-Hood ventilation controls inside Kresge & Spangler Halls	\$157,250	\$157,250	\$82,497	2.3	44%

### ***Oberlin College's Veggie Oil Tractor***

The Oberlin Green EDGE Fund financed a project that converted a grounds tractor to run on leftover vegetable oil from the dining halls. The grounds crew converted the initial 35 horsepower tractor in 2009, and since that time has converted an additional 55 horsepower tractor and two lawn mowers.<sup>17</sup> The Green EDGE Fund has invested between \$7,500 and \$10,000 collectively in these four conversions, each of which have a payback of between four to five years.<sup>18</sup> Upfront costs are primarily from the materials and time required to convert the engine, though there are additional costs from collecting, storing, and filtering the cooking oil to produce usable fuel for the vehicles.

Even with these added expenses, an analysis conducted by Oberlin's Grounds Department estimated a collective cost savings of \$4,660 per year.<sup>19</sup> Most notably, the benefits of this project are twofold: dining services is able to dispose of its used cooking oil, and Grounds can reduce operational costs by shifting from diesel to vegetable oil.

*Table 2. Tractor Conversion at Oberlin College*

<b>55hp Tractor Conversion Payback</b>	<b>Gallons</b>	<b>Price</b>	<b>Total Cost</b>
<i>Cost to Run 55hp Tractor on Diesel</i>	550 gal	\$2.90	\$1,595.00
<i>Cost to Run 55hp Tractor on Recycled Vegetable Oil</i>	550 gal	\$1.17	\$643.50
<i>Fuel Cost Savings Per Year</i>			\$951.50
<i>Cost of 55hp Conversion</i>			\$3,519.00
<i>Payback Period for Conversion Cost (years)</i>			3.7 years



### Campus and Community Garden Work

<b>Name of institution</b>	Whitman College
<b>Location</b>	Walla Walla, Washington
<b>Full-time student enrollment</b>	1,539 students
<b>Endowment size</b>	\$395.8 million
<b>GRF</b>	Sustainability Revolving Loan Fund
<b>Size of fund</b>	\$50,000

The Model Farm Project at Whitman College shows how campus garden initiatives can engage the community. In 2009, a group of five students proposed a campus garden to Whitman's GRF, the Sustainability Revolving Loan Fund. In their proposal, the students argued that a garden would provide the campus community, especially students, with a way to interact with food produced on-site, as well as foster a direct relationship between student growers and Bon Appétit, the college's food services company. The initiative also aimed to increase the amount of local produce offered in the dining halls and provide data that they hoped would create support for a larger farm project in the future.<sup>20</sup> The Sustainability Revolving Loan Fund contributed a \$600 loan to the project, and projected between two to three and a half years to repay the loan.<sup>21</sup>

Due to the high market price for salad greens, the project repaid its initial investment in less than two years. Yet according to Zoe Pehrson, one of the project's champions and its first garden intern, the Model Farm Project made its biggest impact through student engagement. While the small farm did not significantly alter the amount of sustainably grown food served in the dining halls, Pehrson said that "the amount of educational opportunities and awareness that it has created on campus has been significant, and there is value in that."<sup>22</sup>

"In the salad bar where the microgreens usually go, there's a little tag that says 'microgreens grown by student agriculture at Whitman.'" Said Pehrson. "This gesture aims to engage every student that consumes baby lettuce from the farm project."



*A look inside the Model Farm Project, the rooftop greenhouse at Whitman College.*

<b>Name of institution</b>	University of Montana, Missoula
<b>Location</b>	Missoula, MT
<b>Full-time student enrollment</b>	15,642 students
<b>Endowment size</b>	\$133 million (UM system)
<b>GRF</b>	Kless Revolving Energy Loan Fund
<b>Size of fund</b>	\$249,422

The Kless Revolving Energy Loan Fund (KRELF) at University of Montana, Missoula contributed to the construction of a Hoop House at PEAS Farm, the Department of Environmental Studies' site for hands-on agricultural education.<sup>23</sup> Managed jointly with a Missoula non-profit called Garden City Harvest, the Hoop House was designed to grow produce beyond Montana's short growing season. The farm supplies farmer's markets, the local senior center, and low-income town residents. Though the Hoop House does not produce enough to turn a profit, Zachary Brown, president of the Student Government organization at the University which works closely with KRELF, said that the garden is an educational experience for students and gives them a purposeful connection with the outside community.<sup>24</sup>

The Kless Revolving Energy Loan Fund has also been involved with 1,000 New Gardens, a student group that reaches out to interested community members interested in learning to garden. Student volunteers are equipped with tools and help to break ground, connecting these new urban gardeners with a community and providing further resources to help them get started. The group's main source of revenue is a Coffee to Compost program, where local coffee shops pay a small fee to have their used grounds removed. Through a sustainability grant, Missoula's GRF helped finance a few of the bike

trailers used in Coffee to Compost operations.<sup>25</sup> For schools looking to connect students and local residents, a portion of their GRF could go to finance food production projects that do not have a clear-cut payback but do have marked community and sustainability benefits, like at the University of Montana.

The Oberlin College Green EDGE Fund has also financed numerous garden initiatives that promote student and community engagement alongside projects that have quantifiable paybacks. In 2009, the Green EDGE Fund began accepting project proposals from students, faculty, staff, and community members. The Green EDGE Fund granted \$15,000 to the Oberlin Community Services Garden, which produces food and subsidizes food costs for low-income residents. The fund contributed an additional \$7,500 to the Johnson House Garden, a house managed by students in the Facilities Department Resource Conservation Team. The Green EDGE Fund also granted \$15,000 to the George Jones Farm water retention project, and funded the Prospect Learning Garden at a local elementary school in collaboration with an Oberlin Environmental Studies 101 class.<sup>26</sup>

### *Permaculture on Campus*

Herb gardens can be a successful GRF project for schools interested in sourcing a small amount of produce directly from campus. Harvard University's Louisa Denison described the possibility of using permaculture, a sustainable design philosophy that utilizes the surrounding natural environment to promote permanent agriculture, as a source for herbs from the Harvard grounds.<sup>27</sup> Small permaculture projects are well suited to the structure of Harvard's Dining Services as the university is comprised of 12 schools with decentralized dining hall management and facilities.<sup>28</sup>

"There could be some smaller scale edible landscapes near each Dining Services location, which would, in ideal form, reduce some of the more intensive landscaping that needs to happen," said Denison. A green revolving fund could invest in the research required beforehand and the proper implementation of the best permaculture design for the location. As this method is less resource intensive than traditional landscaping, edible landscapes generate cost-savings while sourcing food from right outside the walls of the dining hall.<sup>29</sup>

<b>Name of institution</b>	Swarthmore College
<b>Location</b>	Swarthmore, PA
<b>Full-time student enrollment</b>	1,545 students
<b>Endowment size</b>	\$1.5 billion
<b>GRF</b>	Renewing Fund for Resource Conservation
<b>Size of fund</b>	\$43,500

### *Organic Lawn Care*

In 2011, the Renewing Fund for Resource Conservation at Swarthmore College invested in an Organic Lawn Care project. Pre- and post-consumer food waste generated by the dining hall is brewed into a “compost tea” that is used to fertilize a five-acre section of turf on campus. To date, the GRF has invested nearly \$6,300 into the project. Included in the loan were money to hire an external turf specialist and the processing equipment (for Swarthmore, it was a large container) to hold the crushed compost, with rotary composters cooking and stirring the liquid.<sup>30</sup>

Carr Everbach, Faculty Co-Chair of the Sustainability Committee, noted that caring for the lawn organically is an educational experience for students and staff.<sup>31</sup>

“It’s part of a science project,” said Everbach. “The organic lawn is only a third of the total size, and so we have lysimeters and groundwater monitoring stations placed both on the organic side and the conventionally fertilized side. We’re measuring the properties and we’re doing an assessment and comparison of one piece of lawn that is organic and one piece that is not.”

The Organic Lawn Care was estimated to payback in five years by avoiding the costs of the chemical inputs that the school had historically used to maintain the grounds.



*Swarthmore students Camille Robertson and Rebecca Ringle install groundwater samplers for the college's Organic Lawn Care project with the help of Grounds Crew member Nicole Lewis.*

### **Potential Obstacles to Success**

Financing food and dining projects with GRF money can present some challenges due to dining services' unique position as a separate entity on many campuses. Many colleges and universities outsource food service to a third party, so it can be more difficult to connect GRF funding with external companies. John Luthi, Chair of the Bucknell Green Loan Fund, stated that Bucknell University's contract with Parkhurst may complicate the connection between Dining Services employees and the Renewing Fund for Resource Conservation.<sup>32</sup>

"The impact of their contract and the fact that it's not all Bucknell is just another wrinkle that we have to consider," said Luthi.



*As its first project, the Bucknell University Green Fund invested \$7,033 into installing 40 vending miser units into beverage machines across campus to reduce energy use. With an estimated annual savings of \$4,200, the project is on track to pay back the initial investment in less than two years. Green Fund Chair John Luthi noted that the short payback period is what made this project particularly compelling.<sup>33</sup>*

Swarthmore's Renewing Fund for Resource Conservation noted that school-operated Dining Services face some challenges because of how food service is financed.<sup>34</sup>

"Dining Services has its own budget, and it's a wasting budget that's not meant to make a profit," said Everbach. Dining Services receives year-to-year funding, and cost savings from projects such as equipment upgrades may not necessarily benefit the organization directly.<sup>35</sup> Harvard University's Denison said that although Dining Services has a separate financing scheme, different branches within the university have used the Green Loan Fund as a resource.<sup>36</sup>

"Our Dining Services Director of Operations has used the green revolving fund for larger, more capital-intensive projects," said Denison. For education- and community-based projects, Denison noted that she does think there are initiatives that qualify, though the connection between Dining Services and the Green Loan Fund is still a work in progress.<sup>37</sup>

### **Other Opportunities for Investment: Trayless Dining**

For schools that prioritize waste and resource reduction, creating the option for students to forgo the traditional tray in dining halls can be a strong investment for a GRF just getting off the ground. Like composting, this project may require an educational component to counter the status quo surrounding

the need for a cafeteria tray. Though eliminating trays may make the dining experience less convenient for some students, it has been demonstrated to conserve a number of resources. In a study conducted by Aramark Higher Education, trayless dining was found to reduce food waste by 25 to 30 percent per person.<sup>38</sup> Dining services save money by using less energy to produce meals, creating less food waste, and eliminate the need for hot water and detergent to clean the trays.<sup>39</sup> To compound the effects of their composting initiative, Iowa State University also launched a trayless dining effort to maximize the campus' ability to minimize and divert waste.<sup>40</sup>

## **Conclusion**

Using a GRF to finance food and dining initiatives is a growing area for investigation, though preliminary research has demonstrated that strengthening the connection between Dining Services and GRFs is the first step in this process.

Dining services can utilize funding if the university is seeking to initiate a food service project that can pay back a loan through cost savings resulting from resource reduction or waste diversion. Outside of dining services, members of a campus community should consider GRFs a financial resource for food education projects that seek to engage a wide range of people on campus. By financing visible initiatives, the model actively raises awareness for sustainability efforts while generating ongoing savings.

Several GRF representatives remarked that this connection would be a novel and well-received concept at many colleges and universities. For example, when asked if the University of Minnesota, Duluth's Green Revolving Fund would finance food service projects, Sustainability Coordinator Mindy Granley emphatically answered, "Yes, we definitely would!"—yet the Committee has not received any proposals yet. Though campus Dining Services has already made equipment upgrade investments on its own, Granley noted that the GRF would be willing to help fund these types of projects in the future.<sup>41</sup>

Former Dartmouth student and co-architect of the Dartmouth College Green Revolving Loan Fund, Joe Indvik, said that collaboration between food and dining projects and GRFs is largely untapped.<sup>42</sup>

"There are a lot of opportunities here that are perhaps going untapped even more than standard energy efficiency options." Said Indvik. "You want to talk about effective ways to engage students around sustainability—everyone eats several times a day, whereas energy efficiency can go unnoticed in the building systems around you."

## Appendix A. Sample of Dining Service Sustainability Projects

Name of Institution	State	Name of Fund	Size of Fund	Sample Project(s)
Bucknell University	PA	Green Loan Fund	\$11,560	Vending machine misers
Carleton College	MN	Sustainability Revolving Fund	\$79,600	Compost pulper
Dartmouth College	NH	Dartmouth Green Revolving Fund	\$1,000,000	Reusable food containers
Harvard University	MA	Green Loan Fund	\$12,000,000	Kitchen equipment upgrades including dishwasher and refrigerator; Air ventilation control upgrades in campus buildings
Iowa State University	IA	the Live Green! Revolving Loan Fund	\$1,000,000	Compost system installation; trayless dining
Grand Valley State University	MI	Sustainability Reinvestment Fund; Energy Reinvestment Fund	\$45,000; \$3,500,000	Irrigation and tools for the Farm Hoop House
Oberlin College	OH	Green EDGE Fund	\$90,000	Compost pulper (grant), herb garden plantings in campus dining halls (grant)
Swarthmore College	PA	Renewing Fund for Resource Conservation	\$43,500	Pre- and post consumer food waste composting system

## Appendix B. Methodology

From June through August 2012, SEI sent a survey concerning sustainable food- and dining-related projects to 18 schools in the United States and Canada. From that survey, 8 schools indicated that had food- and- dining projects that considered resource- and waste-reduction processes as a factor of implementing the project.

<sup>1</sup> Rankin, Merry. Phone interview. June 18, 2012.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

<sup>4</sup> Levandowski, Nancy. Phone interview. July 24, 2012.

<sup>5</sup> Ibid.

<sup>6</sup> Larson, Martha. Phone interview. June 25, 2012.

<sup>7</sup> Larson, Martha. Phone interview. June 25, 2012.

<sup>8</sup> Meyers, Noel. Phone interview. August 7, 2012.



- <sup>9</sup> Meyers, Noel. Phone interview. June 22, 2012.
- <sup>10</sup> Gardner, Stephanie. Phone Interview. July 2, 2012.
- <sup>11</sup> Gardner, Stephanie. Personal email to Celeste Berg. "Re: Water Bottle Project." August 7, 2012.
- <sup>12</sup> Ibid.
- <sup>13</sup> Denison, Louisa. Phone interview. June 29, 2012.
- <sup>14</sup> Ibid.
- <sup>15</sup> Stacy, Jennifer. Personal email to Celeste Berg. "Re: GLF Dining Equipment Retrofits/Upgrades." Attached: "Kitchen GLF" Excel spreadsheet. August 3, 2012.
- <sup>16</sup> Stacy, Jennifer. Phone interview. June 20, 2012.
- <sup>17</sup> Greive, Dennis. Phone interview. July 23, 2012.
- <sup>18</sup> Meyers, Noel. Phone interview. June 22, 2012.
- <sup>19</sup> Greive, Dennis. Personal email to Celeste Berg. "Re: Oberlin Tractor Conversion." Attached: Labor and Equipment Cost Worksheet, March 2011. July 30, 2012.
- <sup>20</sup> Pehrson, Zoe. Phone interview. July 11, 2012.
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- <sup>22</sup> Pehrson, Zoe. Phone interview. July 11, 2012.
- <sup>23</sup> The University of Montana. *PEAS Farm*. Accessed January 3, 2012.  
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- <sup>25</sup> Brown, Zachary. Phone interview. June 22, 2012.
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- <sup>27</sup> Urban Harvest. *Definition of permaculture*. Accessed July 19, 2012.  
<http://www.urbanharvest.org/permaculture/definition.html>
- <sup>28</sup> Denison, Louisa. Phone interview. June 29, 2012.
- <sup>29</sup> Ibid.
- <sup>30</sup> Everbach, Carr. Phone interview. June 19, 2012.
- <sup>31</sup> Ibid.
- <sup>32</sup> Luthi, John. Phone interview. June 20, 2012.
- <sup>33</sup> Luthi, John. Phone interview. June 20, 2012.
- <sup>34</sup> Everbach, Carr. Phone interview. June 19, 2012.
- <sup>35</sup> Ibid.
- <sup>36</sup> Denison, Louisa. Phone interview. June 29, 2012.
- <sup>37</sup> Ibid.
- <sup>38</sup> "The Business and Cultural Acceptance Case for Trayless Dining." ARAMARK Higher Education. July 2008. Accessed January 3, 2013.  
<http://www.aramarkhighered.com/assets/docs/whitepapers/ARAMARK%20Trayless%20Dining%20July%202008%20FINAL.PDF>
- <sup>39</sup> Ibid.
- <sup>40</sup> Levandowski, Nancy. Phone interview. July 24, 2012.
- <sup>41</sup> Granley, Mindy. Phone interview. June 28, 2012.
- <sup>42</sup> Indvik, Joe. Phone interview. July 2, 2012.