



Green Fund Project

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Project Work: Fall 2013 - Spring 2014

Implementation Date: April 22, 2014 (Earth Day)

Awardees

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Logo design by James Frankis

1. Introduction

Green&Go is a student developed project that has enabled students to acquire reusable to-go food containers in the University Center cafeteria. The objective of Green&Go is to limit waste created from food containers and promote environmental stewardship across the New School community.

The inspiration came from a pilot waste stream analysis that three of the awardees participated in the previous year. Through this analysis, we discovered that compostable to-go containers at the New School were being inappropriately discarded as landfill waste at a high rate, even though The New School has separate receptacles for compostable materials. This

means that these compostable containers are not being used to their full potential. Even if all of the proper behavioral changes could be made, implementing a reusable to-go container system could still be environmentally preferable. According to the EPA's widely cited Waste Management Hierarchy (EPA), reducing the amount of products used through reuse is preferable to recycling or composting (Figure 1).



Figure 1: Hierarchy of Waste Management Strategies from Most Preferred to Least (EPA)

2. Logistics

The overall flow of the program begins at the register (See Figure 2 on the following page), where students, faculty, or staff pay a \$5 deposit fee. After usage, the containers are returned on a moveable track, then they go through an industrial dishwasher. Then, their unique barcodes are scanned and the appropriate customer receives a \$5 credit on their account. The funds take approximately 24 hours to appear in an account.

The deposit fee was designed as an incentive for customers to return the containers. The \$5 price was arrived at because it is the approximate cost per unit, and the continued feasibility of the program requires that the costs to dining services be minimal in the event that containers are lost or not returned.

The program requires payment via a Newcard (The New School ID card). This allows for electronic usage monitoring, barcode information, and return of the deposit fee. Cash does not

allow the user to be associated with a particular container and therefore cash customers can not use this program at this time.



Figure 2: How Green&Go Works

*it is not possible to pay with cash, credit, or debit

The University Center cafeteria currently does not have an area where customers could return containers to an employee and be refunded by hand. Students are not allowed to bring used containers back into the cafeteria where cashiers are stationed, and dishwashing staff are located in a separate room. The creation of a staffed return area, and diversion of a staff member to perform this duty, is not financially feasible.

Credit/debit cards are also not logistically possible either due to the increased

technical challenges and fees associated with refunding onto them. Paying with a Newcard offers the user additional benefits besides the ability to take part in Green&Go including not paying food sales tax and discounts at various local food establishments.

If the program expands, it has been suggested by multiple individuals that a “reverse vending machine” be put in place to accept containers and produce either the deposit fee or a credit for a container. Throughout our research, only one school was discovered to have such a machine, the University of Maryland. A representative from their program, Allison Gail Lily, was interviewed as part of this project. She said that the machine they use is known as the “Ozzi”, costs about \$6,000 per unit, and is sometimes “finicky”, but has been crucial to the success of their program.

3. Life Cycle Analysis

A Life Cycle Analysis (LCA) was undertaken to quantify the environmental benefits produced from using the Green&Go program as opposed to the university standard compostable to-go containers. It is widely thought that reusing existing materials is environmentally preferable as compared to recycling or composting disposable items and using energy and raw materials to create more disposable products. However, reusable materials must be built using thicker and/or stronger materials, and they also require maintenance. In the case of reusable to-go containers, this maintenance involves using water, chemicals, and energy after every usage to ensure proper sanitation. While these environmental impacts are likely to still be significantly less

than the creation of many more disposable containers, data on the precise impacts of disposable vs. reusable containers is not widely available.

4. Survey

In order to gain a stronger understanding of The New School community's impression of Green&Go and barriers to use, a survey was conducted. Through a partnership with Jackie Brookner's Sustainable Systems class, the survey created additional value by fulfilling one of the "experiment" requirements for the course. A presentation on Green&Go's logistics and environmental benefits was given to the class. The students were then asked to give input on what they saw as potential barriers to successful implementation. Based on those concerns, Laura and the class developed a survey. As part of their assignment, each student interviewed faculty members and fellow students following the question guidelines that were established in class (See Appendix 8a. for full listing of survey questions).

5. Results and Discussion

5a. LCA

According to the results of our preliminary LCA, the reusable Green&Go containers are 94% more environmentally preferable than the disposable compostable option. Ten percent or more is considered a "meaningful improvement" (Sustainable Minds). This result was obtained using Sustainable Minds software under the following assumptions:

- The components of each container and amount of each component were obtained from respective the manufacturers (polypropylene vs. recycled paper with polypropylene coating)
- Compostable container would be used once, reusable used 360 times (derived from amount of times manufacturer suggested container could be used)
- Compostable container would be landfilled at the end of use, reusable container recycled (based on the pilot waste stream study, which showed a high incidence of biodegradable being thrown in the trash [35-40%], and a comparatively low level of recyclable plastic being discarded that way [6-9%])
- Water usage was factored into reusable container based on dishwasher manufacturer's specifications

Important questions for future research include:

- What is the "environmental break-even point", i.e. how many uses does it take before the reusable container becomes environmentally preferable as compared to the single use option?
- How would composting the single use container at the end of its life change the results (Sustainable Minds does not currently have data on composting impacts)?
- How would factoring in soap and energy usage for cleaning the containers impact the results?

5b. Survey

We found that the majority of people surveyed were ambivalent about participating in the Green&Go program, however there were more people interested in participating in the program than not interested (Figure 3). This is promising considering the very slow adoption rates that similar programs have faced at other universities.

In addition, we found that our current deposit system was the least preferred out of other suggested payment structures (Figure 4)¹. Further exploration of alternative strategies that continue to meet the needs of all stakeholders is advised as this payment structure could prevent people from taking part in the program (Figure 5). Stakeholder needs include ensuring that there is an incentive to return the containers in a timely manner and prevent theft/negligence.

Would you be interested in participating in the Green&Go program? (choose one)

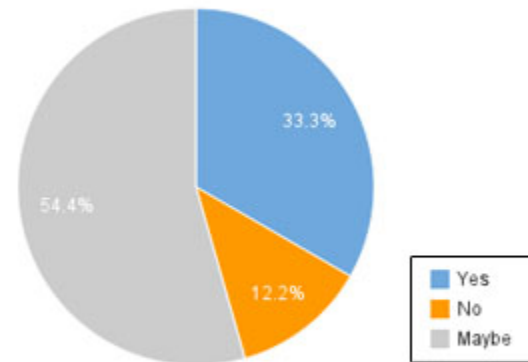


Figure 3: Percentage of survey respondents interested in participating in Green&Go program

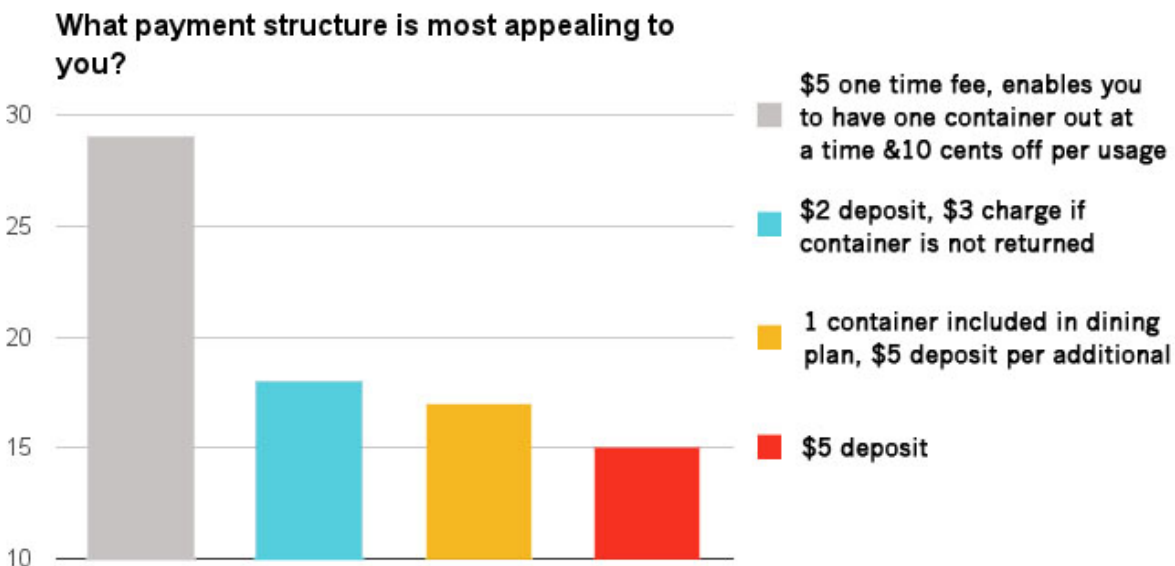


Figure 4: Payment structures in order of popularity by number of respondents

¹ Note: in order to show responses in a clear manner, some of the text from the survey has been condensed to create charts. To see a full listing of exactly how the survey questions and answers were phrased, please see Appendix A.

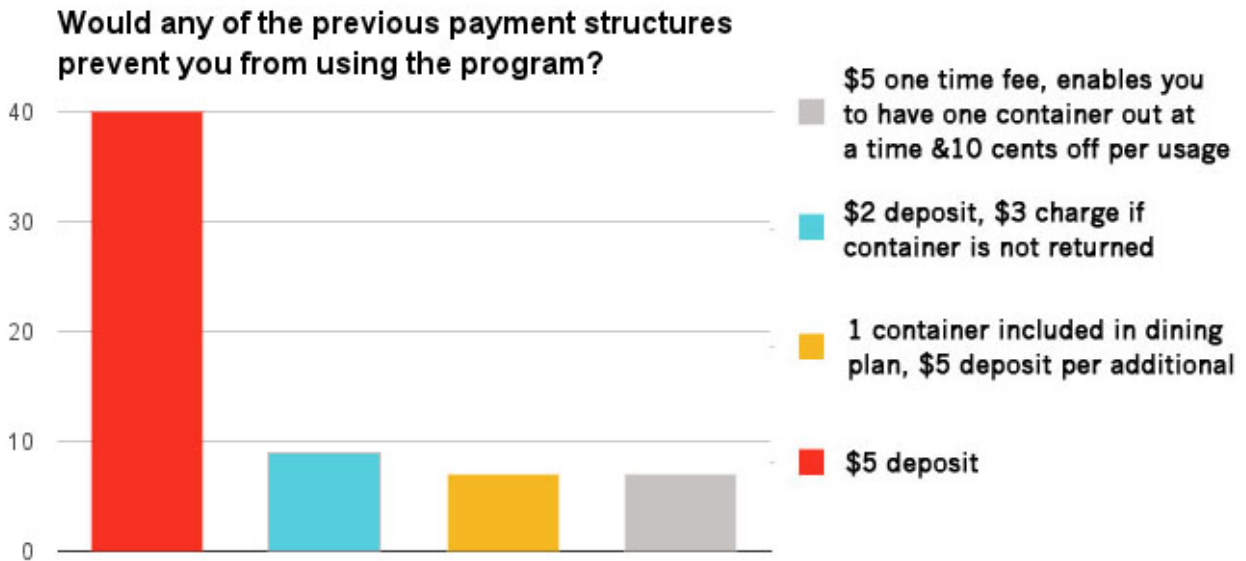


Figure 5: Payment structures that would prevent joining by number of respondents
(Key is the same as Figure 4 for comparison purposes)

Important questions for future research include:

- Is knowledge of the program growing?
- Is signage adequate/properly intelligible?
- Assuming payment structure is changed: measure improvement in participation

6. Publicity/Communications

6a. Conferences



Information about Green&Go was presented on Monday, May 19-21st 2014 at the annual NY Federation Solid Waste and Recycling Conference, as well as at the New School event Sustainapalooza. The NY Federation conference brought together private companies, government representatives, nonprofits, and academic institutions for a trade show and a series of presentations. We were honored to be one of the few student groups selected to present. This gave us a great opportunity to network, learn,

Sustainapalooza was a conference organized by New School students as part of an Environmental Studies course. It provided students and recent graduates across the region with the opportunity to present sustainability-related projects that they pioneered. It was held at The New School from April 11th-12.

[illegible]

Forming partnerships with related classes turned out to be one of the most effective communication tools for getting information about Green&Go out to students. The classes that incorporated Green&Go included Environmental Science, Sustainable Systems, and Community Engagement.

Devashree spoke about Green&Go to a community engagement course that she co-taught. An assignment was given to design signage that would engage, inform, and inspire other students to participate. Devashree and Laura critiqued each group's project in terms of how the message was delivered, design, and educational value. Through these courses, a wide range of students developed knowledge of the program and the environmental benefits associated with it.

Shortly after the release of Green&Go, a picnic was held that was able to generate zero waste, thanks to Green&Go. The event was promoted through announcements at the Sustainable Cities Club and postings on multiple listservs. See flyer below for more details:

Zero-Waste Picnic

Hosted by Green&Go

Saturday, April 26th: Meet at UC 12pm

We will get food to-go and walk to Washington Square Park or meet us at the park at 1pm

Green&Go is a new reusable to-go container program in the University Center cafeteria.

For a \$5 deposit, you can reduce your environmental impact by taking a reusable container, rather than a disposable product.

Bring it back to the University Center Cafeteria and get your \$5 back!



You need funds on your newschool card to participate in Green&Go.

Put funds on your new card by going to mynewschool > student tab > Meal Plans and newcardcash *When you pay with your newschool card you don't pay tax!*

7. Recommendations for Moving Forward

In order to create a sustainable program structure, going forward, Green&Go will be fully managed by Dining Services. Given our experience and the feedback we have received over the course of the project, we would like to provide recommendations in the following areas:

Ensuring loyalty to the program:

- Explore an alternative payment option such as paying \$5 to get into the program or only paying if a container is never returned, à la the library card system (Figure 4).
- Reward the participants in the program through a tiered reward system
- Charge 10 cents for disposable containers
- Design signage for the dorms and lounge areas to remind customers to bring back their reusable containers
- Increase drop-off areas

Marketing the program:

- Launch in the beginning of the semester

- Continue partnership with class(es): Sustainable Systems is an ideal course to partner with for assistance with program promotion because
 - There is a “field action” assignment, in which students need to create an extensive project outside the classroom
 - Since it is a Parsons course, there is a lot of design (web and print) skills that can be leveraged
- Design infographic that explains the process-flow for the program
- Print interesting slogans on the existing brown- take-away-box given out by the cafeteria that would explain how the environment is benefited when using a reusable Green & Go container instead
- Place containers in a more prominent place: possibly give to servers

Extending the scope of the program:

- Introduce soup bowls at a lower cost (soup bowls cost less). This was requested by focus groups used to study the customer requirements
- Increase the current reusable clamshell containers if there is demand

Ensuring long-term sustainability benefits for The New School Cafeterias:

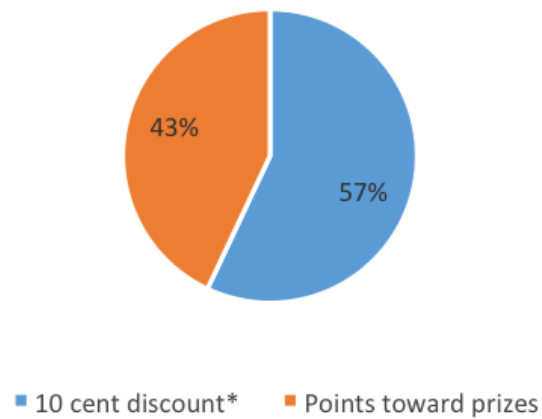
- Provide a benefit analysis from customers participating in the program
- Identify any gaps that can be addressed to bolster the longevity of the project by conducting survey / focus group to understand needs of students/staff/faculty who do not use the program at the moment
- Provide an analysis of the waste diverted from landfills once the program is functional

8. Appendix

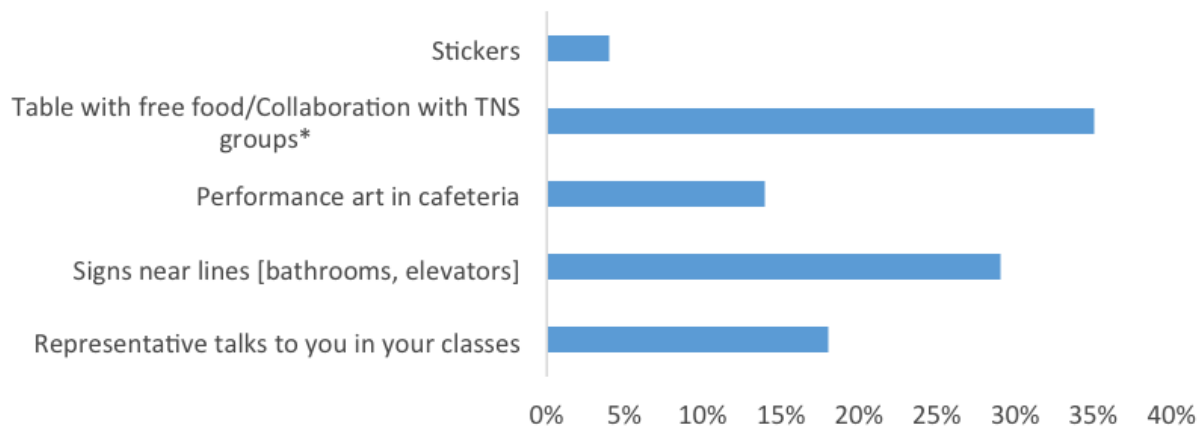
8a. Survey Results

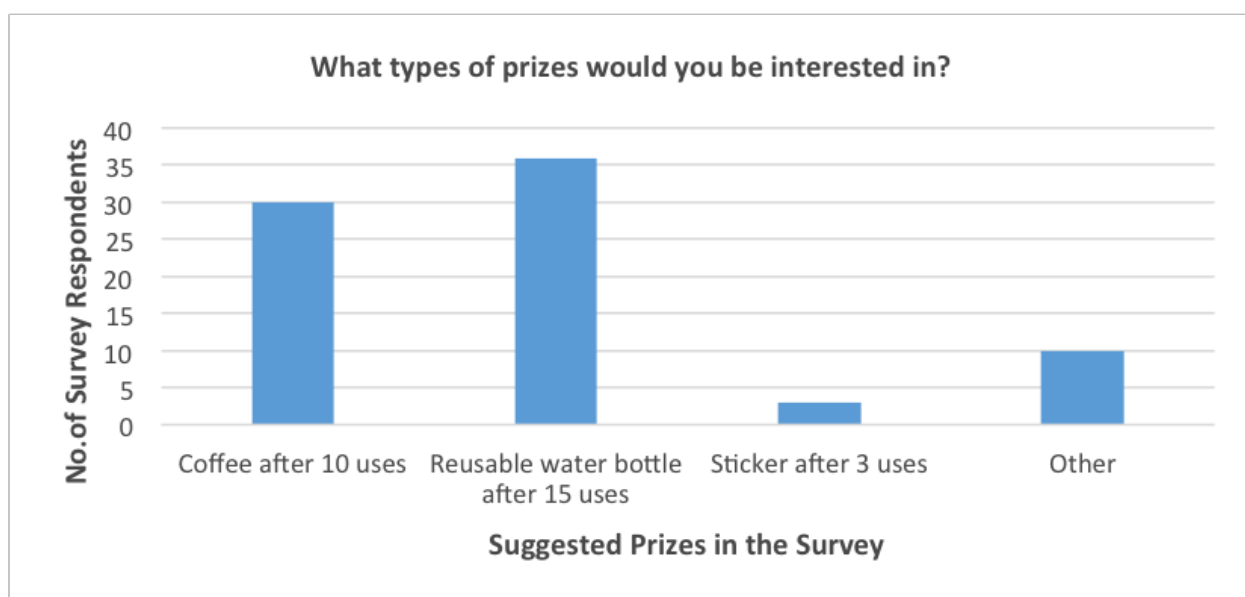
Additional Charts:

What type of system would incentivize you the most to participate?



How are you most likely to take in new information about activities/ programs going on at The New School





Survey Questions:

1. Would you be interested in participating in the Green&Go program? (choose one)

	Total number	Percentage
Yes	30	33%
No	11	12%
Maybe	49	54%

2. What type of system would incentivize you the most to participate? (choose one):

	Total number	Percentage
10 cent discount*	43	57%
Points toward prizes	32	43%

*Some students later said they thought this option was 10%

3. What types of prizes would you be interested in? (you can choose multiple):

	Total number	Percentage
Coffee after 10 uses	30	38%
Reusable water bottle after 15 uses	36	46%
Sticker after 3 uses	3	4%
Other	10	13%

4. How are you most likely to take in new information about activities/programs going on at The New School (choose one)

	Total number	Percentage
A representative going into your classroom and talking about it	14	18%
Signs near lines [bathrooms, elevators]	22	29%
Performance art in cafeteria	11	14%
Table with free food/Collaboration with TNS groups	27	35%
Stickers	3	4%

*Students said that the food was a bigger driving factor than collaborations

5. Which payment structure is most appealing to you (choose one)?

	Total number	Percentage
Deposit system: Pay \$5 when you take the container out, get \$5 back when you bring it back	15	19%
Pay \$5 to sign up for the program, which enables you to have one container free of charge out at a time, get 10 cents off every time you use one of the containers	29	37%
One container is included in your New School Dining plan, so you are not charged when you take it out. You will be charged \$5 if you take a second one out before returning the first one. You can get the \$5 back by returning the container	17	22%
Pay \$2 when you take out a container, get \$2 back when you return it, if you don't return it after 30 days you get charged an additional \$3 for the price of the container	18	23%

6. Would any of the previous payment structures prevent you from using the program and if so which one (write letters)?

	Total number	Percentage
Deposit system: Pay \$5 when you take the container out, get \$5 back when you bring it back	40	63%
Pay \$5 to sign up for the program, which enables you to have one container free of charge out at a time, get 10 cents off every time you use one of the containers	7	11%
One container is included in your New School Dining plan, so you are not charged when you take it out. You will be charged \$5 if you take a second one out before returning the first one. You can get the \$5 back by returning the container	7	11%

Pay \$2 when you take out a container, get \$2 back when you return it, if you don't return it after 30 days you get charged an additional \$3 for the price of the container	9	14%
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8b. Project Evolution

For various logistical reasons, the eventual design of Green&Go differed significantly from our original proposal. The original proposal has been replicated below, with notes regarding the various changes.

Double Savings²

Campus catering facilities have become increasingly sustainable with the addition of compostable packaging/silverware, yet reusable containers would be the most sustainable option of all. With the New School's limited space for washing dishes, the best way to achieve this would be changing student behavior to carry reusable food containers and even silverware with them³. This goal could be achieved through incentives, promotion and increasing access.

We propose working with campus dining service providers to develop incentives/"prizes" for students who bring in reusable food service materials. For instance, students, faculty and staff could receive "punch cards" so that the number of times they have bought in their reusable containers/cutlery could be tracked. Once they get to ten punches, a free meal (or other agreed upon "prize") would be offered to reward diners. At the end of the year, a grand prize could be offered to the diner who brought in reusable materials the most frequently.

Data would be collected to see how many diners "buy in" to this program, and how long this process takes. Promotional and educational events could include tabling at New School events and giving out a limited amount of free reusable containers/utensils as prizes for winning other sustainability-themed games. We would also promote the sale of renewable containers in the cafeteria.

² Double Savings was the original title of Green&Go. It was meant to signify the savings regarding environmental impacts as well as to the students gaining prizes.

³ Upon further investigation, it was found that Department of Health standards prohibit consumers from bringing their own containers into a food service area. This is because of the potential for the spread of disease in the advent that a consumer has not properly washed their container. The consumer could potentially touch the contaminated container with communal tongs, and then reinsert them into the food service area.

Initial Modifications

In response to our initial proposal, The Green Fund Committee devised a series of changes they would need to allow the project to move forward. These changes were accepted by the project team, and have been reproduced below:

1. Turn this into a pilot project exclusively using the University Center residents as the first participants in a reusable container program in the building's new cafeteria
2. You must work with Ed Verdi in charge of Dining Services to spec reusable containers (and possibly utensils), and develop a plan and timeline
3. Have the program ready to launch by the time the UC cafeteria opens in late January

8c. NY Federation Solid Waste and Recycling Conference

Abstract Submitted:

Presentation Title: Green&Go: A Reusable to-go Container Pilot Project at The New School

Authors: Merli, Laura; Nehring, Katherine; Saha, Devashree; and Rountos, Konstantine (faculty advisor)

College and university cafeterias can generate substantial amounts of refuse (e.g. uneaten food, packaging and to-go containers) that could be more efficiently managed or reduced. Source reduction and reusing of materials are widely seen as the best strategies for reducing solid waste, and the environmental impacts that come with it. We present a pilot container deposit program (Green&Go) to be implemented in the new cafeteria at The New School university in New York City in January 2014. Previous research has shown that even though compostable and recycling collection bins are widely available on campus, a large fraction of compostable and recyclables still end up in the landfill waste stream. Our program aims to (describe what we will do, i.e. have students, faculty and staff use our reusable to-go containers). To assess the utility of this program we will compare the environmental costs of these reusable containers to the compostable containers using a lifecycle approach and discuss strategies for successful implementation.

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Monday a.m.—May 19, 2014

7:30 - 8:30 a.m.

CONFERENCE REGISTRATION — Conference Center
Registration Table Sponsored by: **Care Environmental Corp.**

7:30 - 8:30 a.m.

CONTINENTAL BREAKFAST WITH EXHIBITORS — Events Center
Breakfast Sponsored by: **Agru America, Inc.; CHA; Golder Associates, Inc.; McMahon & Mann Consulting Engineers; Toter, Inc.**

All Day, (closed 12:30 - 1:30 p.m. for lunch)

TRADE SHOW — Events Center

COMPOST CONTEST — Conference Center Lobby
Compost facilities are invited to bring a sample of their finished compost product with information on how it was produced. A panel of judges will analyze visual, odor, texture and nutrient values. Contact Gary Feinland at gafeinla@gw.dec.state.ny.us if your facility is interested in participating.

8:15 a.m.

MONDAY'S INTRO/PREP — Conference Center Abenia
Speakers and Moderators only

8:30 - 9:00 a.m.

PLENARY SESSION — Conference Center
WELCOME & NY FEDERATION UPDATE — Bellvue
Meg Morris, Chairperson, Federation of NY Solid Waste Associations

9:00 - 9:45 a.m.

PLENARY SESSION — Bellvue
Lori Scozzafava, Executive Director, US Composting Council, Bethesda, MD
The US Composting Council (USCC) is the only national organization in the United States dedicated to the development, expansion and promotion of the composting industry. Lori's plenary presentation will focus on national trends in organics management and food scrap diversion in particular.

9:45 - 10:45 a.m.

NETWORKING BREAK WITH EXHIBITORS — Events Center
Sponsored by: **Environmental Capital LLC; Cummins Westport; Lockwood, Kessler & Bartlett; Green Line Polymers**

10:45 - 12:15 p.m.

BREAKOUT SESSIONS — Conference Center

Striving for Sustainable Organics Management – Panel Discussion – Bellvue
Facilitator: Prentiss Shaw, Cornerstone Environmental Group, LLC, Middletown, NY

Policy Perspectives:

- Lori Scozzafava, US Composting Council, Bethesda, MD
- Sally Rowland, NYSDEC, Albany, NY
- CT DEP Representative (invited)

Field Perspective:

- Yard Waste and Food Scraps (Greg Gelewski, OCRRA, Syracuse, NY)
- Biosolids (Brian Fleury, WeCare Organics, LLC, Jordan, NY)
- Wood Waste from Storm Debris (Robert Lange, NYC DOS, New York, NY)

Changing Mindsets – Evelley

- Moderator:** Jamie Tuttle, Oneida-Herkimer SWA, Utica, NY
- Pile of Garbage or Community Essential? Defining Waste Project Permitting on Your Terms (Matthew Segal, Calvert Street Group, Nashville, TN)
 - Behavior Change, Education & Action: Implementing the Keep America Beautiful Model in your Community (Alexandra Donovan, Keep America Beautiful, Stamford, CT)
 - Applying a Community Based Social Marketing (CBSM) Framework to Improve Institutional Recycling Rates (Evaadne Gianinni, Hospitality Green LLC, Mountandale, NY)

Top of the Hierarchy – Triuna

- Moderator:** Cindy Livingston, Fulton County Solid Waste, Johnstown, NY
- Community ReUse Centers – A Model of Sustainability (Diane Cohen, Finger Lakes ReUse, Inc., Ithaca, NY)
 - Promoting Reuse via Reuse Marketplace Website (Mary Ann Remolador, Northeast Recycling Council, Inc., Brattleboro, VT)
 - Green&Go: A Reusable To-Go Container Pilot Project at The New School (Laura Merli, The New School, New York, NY)

Oil and Water (1.5 PDH) – Nirvana

- Moderator:** Jim Biamonte, Oneida-Herkimer SWA, Utica, NY
- The Leachate Treatment and Disposal Albatross (Gary DiPippo, Cornerstone Environmental Group, LLC, Middletown, NY & Richard Carbonaro, Mutch Associates, LLC, Ramsey, NJ)
 - A Centralized & Sustainable Approach to Managing Shale Gas Wastewater & Residuals (and landfill leachate) (Jerry Leone & Larry Shilling, Casella Waste Systems, Inc., Stanley, NY)
 - Organics and High Permeability at Landfill Sites - Optimal Environs (Richard H. Frappa, P.G., GEI Consultants, Inc., Amherst, NY)

Nobody "Nose" (1.5 PDH) – Wapanak

- Moderator:** Ken Armellino, Covanta Energy Corp., Morristown, NJ
- BOD, COD, NH3 Reduction and Removal (John O'Brien, NCM Odor and Dust Control, So. River, NJ)
 - A Case Study of Sites Dealing with Landfill Odors (Daryl O'Dell and Matthew Beebe, Cornerstone Environmental Group, LLC, Middletown, NY)
 - Odor Mastering System for Organics Treatment Operations (Maxime Champagnac, P.E. & Claude Beaulieu, P.E., Vortal Inc., Dorval, Ontario)

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Citations

EPA. "Non-Hazardous Waste Management Hierarchy"

Retrieved from: <<http://www.epa.gov/waste/nonhaz/municipal/hierarchy.htm>>

Sustainable Minds. "Sustainable Minds Eco-concept Modeling & LCA demo"

Retrieved from: <<http://www.sustainableminds.com/watch-the-demo>>