Commercial Food Waste Recovery Options In New York City

Matt de la Houssaye

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About Global Green USA

• Global Green: US Chapter of Green Cross International
• Founded by President Mikhail S. Gorbachev to foster a value shift to a sustainable and secure future by reconnecting humanity with the environment. Over 30 national affiliates around the world.
• Global Green creates sustainable urban environments that combat global warming through a unique cross-cutting approach that merges innovative research, technical assistance, cutting-edge community based projects and targeted education and outreach
• 501c3 non-profit organization
Global Green’s Coalition for Resource Recovery (CoRR)

- Industry working group dedicated to combating climate change and transforming waste to assets, and assisting cities in reaching 70% waste diversion.
- Conduct pilots and related research to identify and accelerate development of scalable, transferable waste diversion programs and technologies.
# A Coalition of Members

<table>
<thead>
<tr>
<th>Action Env’ l Group</th>
<th>First Fiber</th>
<th>Pret A Manger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baluchi’s</td>
<td>Green Bay Packaging</td>
<td>Spectra-Kote</td>
</tr>
<tr>
<td>BASF</td>
<td>HAVI Global Solutions</td>
<td>Starbucks</td>
</tr>
<tr>
<td>Bemis</td>
<td>IESI/Progressive</td>
<td>Transtech, Inc.</td>
</tr>
<tr>
<td>Chemol</td>
<td>Imerys</td>
<td>Ulterion</td>
</tr>
<tr>
<td>Clean River Systems</td>
<td>Interstate Container</td>
<td>Waste Management</td>
</tr>
<tr>
<td>DBB Partners</td>
<td>Jamba Juice</td>
<td>Wastequip</td>
</tr>
<tr>
<td>Design &amp; Source</td>
<td>LBP Manufacturing</td>
<td>Western Michigan Univ.</td>
</tr>
<tr>
<td>Duro Bag</td>
<td>N&amp;V International</td>
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</tbody>
</table>
Commercial Food Waste Recovery Program

- Spur innovation and infrastructure development through
  - Convening industry & gov’t stakeholders
  - Modeling options on a city-scale
  - Siting, material handling & technology evaluation
  - Conducting & promoting results of on the ground pilot programs
Presentation Overview

1. Vision for Food Waste Recovery
2. The Market Opportunity & NYC Solid Waste System
3. Food Waste Recovery Options and Scenarios
Vision

For Recovering Value from Commercial Food Waste

- Cost-effective, cheaper for restaurants and grocers than landfill
- Operationally and environmentally sound
- Recovers energy and nutrient value in food waste
- Value recovered locally
- Benefits local communities where facilities are sited
New York City Waste Reduction Goals

• Solid waste chapter included in 2011 PlaNYC for first time
  • Mentioned on-site recovery, and centralized AD for specific industrial food waste sources as an opportunity
  • Local Law 19 2010 amendments to reinstate leaf and yard waste composting and committed to studying feasibility of residential composting and utilizing the capacity of existing infrastructure
  • State of the City announcement to double city’s waste diversion by 2017
Organic Waste in NYC

Food Waste and Yard Waste

• About 4,000 tons per day of residential and commercial food waste is generated.

• Less than 5% of commercial food waste is currently source separated. (Around 80-100 tpd)

*Sources: DSNY NYC Commercial Waste Study and NYC 2005 NYC Waste Characterization Study
NYC Commercial ‘Back of House’ Food Waste Market
≥1,038 Tons Per Day of Back of House Commercial Food Waste

- Restaurants & Hotels: 53%
- Other Foodservice Establishments: 20%
- Retail Foodservice Establishments: 14%
- Medical Facilities: 9%
- Colleges & Universities: 4%
Solid Waste Management in NYC

Waste Generator
- Public Spaces
- Residents
- Institutions
- Businesses

Collection
- DSNY Collection (city contract)
- Private Hauler Collection

Transfer Stations
- DSNY Transfer Station (city contract)
- Privately-owned Transfer stations

COALITION for RESOURCE RECOVERY
The System to Beat

Current scenario for trash with commingled food waste

Waste Generator → In-City Hauling → Waste Transfer Station → Landfill

Transfer Station Tip Fee
$65-80/ton

Rate cap for combined in city hauling and tip fee is $208 per ton.
### Scenarios for Increasing Commercial Food Waste Recovery

<table>
<thead>
<tr>
<th>Options</th>
<th>Leverages Existing Infrastructure?</th>
<th>Tons Per Day per Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Reduction</td>
<td>Yes</td>
<td>65 – 130</td>
</tr>
<tr>
<td>Additional Capacity Available at Peninsula Compost</td>
<td>Yes</td>
<td>150</td>
</tr>
<tr>
<td>New Regional Composting Facility</td>
<td>No</td>
<td>200 – 550</td>
</tr>
<tr>
<td>Co-digestion with Transfer Station Pre-Processing</td>
<td>Yes</td>
<td>40–200</td>
</tr>
<tr>
<td>NYC or NJ Anaerobic Digestion</td>
<td>No</td>
<td>40–260</td>
</tr>
<tr>
<td>Source Separated Food Waste Transfer Station</td>
<td>Yes</td>
<td>100–500</td>
</tr>
</tbody>
</table>
Source Reduction

• Diversion of 65 tons per day of food waste, could save New York City’s businesses $47 million per year – greater than or equal to the cost of a new anaerobic digestion facility

Donations/Food Rescue

• City Harvest is in the process of doubling their food rescue operations to 82 tons per day (on average) using food donated from in-city and out-of-city locations
Regional Composting Facilities
within a 130 mile radius of NYC

McEnroe Farms
New Milford Farms
Ag Choice
Long Island Compost
Peninsula Compost

Source: Global Green, USA
## Regional Composting

### Regional Options

<table>
<thead>
<tr>
<th>Facility</th>
<th>Distance from NYC (miles)</th>
<th>Can take meat waste?</th>
<th>Able to take contamination?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peninsula Compost</td>
<td>130</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>New Milford Farms</td>
<td>83</td>
<td>Yes</td>
<td>Some</td>
</tr>
<tr>
<td>McEnroe Farms</td>
<td>100</td>
<td>Yes</td>
<td>Little to none</td>
</tr>
<tr>
<td>Ag–Choice</td>
<td>54</td>
<td>No</td>
<td>Little to none</td>
</tr>
<tr>
<td>Long Island Compost</td>
<td>62</td>
<td>No</td>
<td>Little to none</td>
</tr>
</tbody>
</table>
Regional Composting

Peninsula Compost

- Largest compost facility on East Coast, permitted for 550 tons per day
- Major outlet for NYC commercial food waste
- Gore based aerobic composting
Regional Composting

The Case for a Closer Solution

- The 260 mile round trip to Peninsula costs haulers $500-$1,000 per shipment in fuel and labor.
- Haulers cited depreciation of trucks and overtime pay as two additional costs associated with shipping food waste this distance.
Identified 5 Sites with a total of over 80 acres of industrial real estate within 25 miles of NYC
Survey results – $15–23 per SF and up
For building new infrastructure:
A few market conditions:
• Retail electricity - $0.21 per kWh
• Wholesale electricity – < $0.03
• Average industrial real estate price $140 per SF (Crains NY, 2011)
• M3 zoning preferred
NYC Specific Considerations for High & Low Solids Anaerobic Digestion

- **Dry/High Solids AD**
  - Limited by availability of leaf and yard waste
    - Likely would require city contract for residential yard waste
    - Seasonal feedstock limitations
    - Given this, dry solids could take ≤ 478 tons per day of food waste in New York City

- **Wet/Low Solids AD**
  - Water output management a key issue
## Regional Real Estate Market

New York City and New Jersey Financial Comparison

<table>
<thead>
<tr>
<th>Cost of Industrial Land (per SF)</th>
<th>New York City</th>
<th>New Jersey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey Results</td>
<td>$70-$80 and up</td>
<td>$15-23 and up</td>
</tr>
<tr>
<td>Average</td>
<td>$140</td>
<td>$70</td>
</tr>
</tbody>
</table>
Co-digestion

- 14 Wastewater treatment plants
- Nutrient load reduction a priority
- 4 digesters within a 1-mile radius of commercial waste transfer stations

Legend

- Commercial Waste Transfer Stations
- Wastewater Treatment Facilities
- 1-mile distance buffer

Source: Global Green USA, NYS Department of Environmental Conservation, 2011.
Co-Digestion

Conclusions

• Allows for incremental growth using existing infrastructure
• Need to meet nutrient discharge limits
• Need to be able to screen out contamination
• Co-digestion of food waste at four wastewater treatment facilities could process 40 to 200* tons per day per facility.*

*Range based on initial and maximum processing capacity of the EBMUD co-digestion project, which started at 40 tons per day and has a maximum capacity of 200 tons per day
## Pre-Processing at Transfer Stations

<table>
<thead>
<tr>
<th>Pre-Processing Activity</th>
<th>Existing Infrastructure</th>
<th>NJ Aerobic Composting Option</th>
<th>NYC Co-Digestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consolidation</td>
<td>Underway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dewatering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screening</td>
<td>Underway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slurry</td>
<td></td>
<td></td>
<td></td>
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</table>
Source Separated Transfer Station Opportunity

- Maximize consolidation, pre-processing, and fuel economy efficiencies to deliver food waste to regional compost facilities and wastewater treatment facilities
- Opportunities for co-location with existing infrastructure
- Provides an incremental and local outlet for source separated residential food waste
- Opportunity for scaling up. NYC transfer stations surveyed are permitted to receive on average over 500 tons per day
On-site Recovery

Game Changer

On-site Food Waste Reduction & Recovery

• ≥50% weight and volume reduction
• Reduced truck trips and greenhouse gas emissions
• Potentially significant pay back to the generator
Thank You

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www.thecorr.org
Sources
Slide 9

Slide 9

• New York City Council (2010). A Local Law to amend the administrative code of the city of New York, in relation to the composting of food waste.


Sources

Slides 10-11

Slide 10
NYC 2005 NYC Waste Characterization Study, Table 1-28, p. 14 and 15


Slide 11
DEP Commercial Food Waste Disposer Study (2008).
Sources

Slides 12-21

Slide 13, 17, and 20
Communications with NYC haulers and regional compost facility operators

Slide 16
City Harvest Website; [http://www.cityharvest.org/facility/](http://www.cityharvest.org/facility/)
[http://www.cityharvest.org/media/pdf/Paving_the_Way_to_a_Hunger-Free_City_Presentation.pdf](http://www.cityharvest.org/media/pdf/Paving_the_Way_to_a_Hunger-Free_City_Presentation.pdf)
Communications with Andrew Shakman, President., Leanpath

Slide 20 and 21
Communications with owners and brokers

Slide 21
CBRE. MarketView. New Jersey Industrial. 3rd Quarter 2011.
Sources

Slides 22-28

Slide 22
Crain’s New York. “Demand for NYC industrial space drives rents up.” Andrew Marks Apr 17, 2011: www.cransnewyork.com/keywords/1297/Grubb+%26+Ellis+Co.#ixzz1b3HJPXPw
Energy Information Administration. Electricity Sales, Revenue, and Average Price http://www.eia.gov/electricity/sales_revenue_price/

Slide 28
Sources

Slides 30

Slide 30
Profiles of NYC commercial putrescible waste transfer stations provided by New York City Department of Sanitation