GLOBAL GREEN USA®

COALITION *for* RESOURCE RECOVERY

The Business of Organics Recycling in Dense Urban Centers: Updates and Case Studies from New York City

New York City | January 29, 2013

About Global Green USA

- US Chapter of Green Cross International. Over 30 national affiliates around the world.
- Global Green's programs create sustainable urban environments by merging innovative research, technical assistance, cutting-edge community based projects and targeted education and outreach.
- 501c3 non-profit organization

About Global Green USA's Coalition for Resource Recovery (CoRR)

- Through its Coalition for Resource Recovery, Global Green brings companies together for targeted, cutting-edge pilots and research designed to address key barriers and catalyze widespread resource recovery.

- For these pilots, Global Green serves as a third–party facilitator that simultaneously provides documentation and environmental leadership with the objective of transforming commonly-wasted materials into assets.

A Coalition of Members

Action Env' l Group
Baluchi's
BASF
Cascades Industrial Packaging
Chemol
Clean River Systems
DBB Partners
Design & Source
Duro Bag
First Fiber
Global Enviro
Green Bay Packaging
Green Box
HAVI Global Solutions
IESI/Progressive
Imerys
Interstate Container
Jamba Juice
LBP Manufacturing
N&V International
Pret A Manger
SEaB
Spectra-Kote
Starbucks
Transtech, Inc.
Ulterion
Waste Management
Wastequip
Western Michigan Univ.

CoRR

Transforming Waste into Assets

Farms

Cities

Restaurants

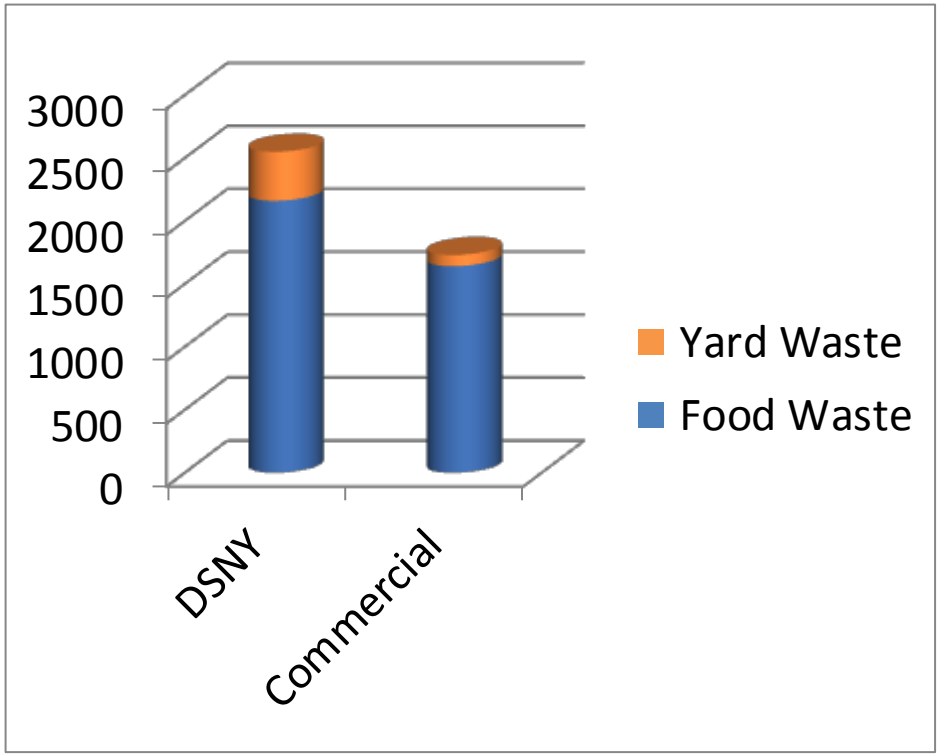
Schools

Presentation Outline

1. Overview of NYC Region Commercial Organic Waste Recovery
2. Global Green's Food Waste Program and Key Findings
3. Opportunities for Scaling up Organic Waste Diversion

Organic Waste in NYC

Food Waste and Yard Waste

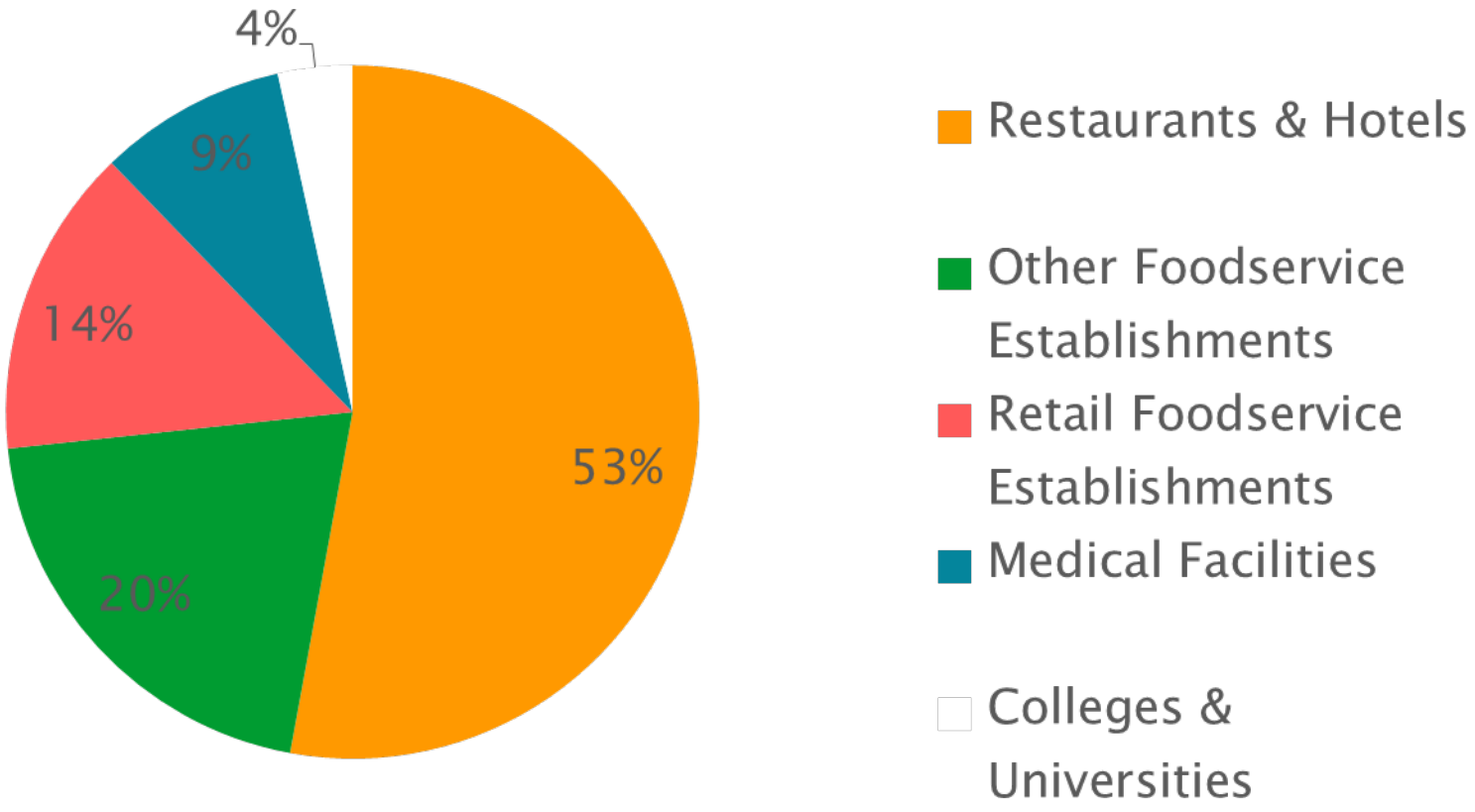


- Over 4,000 tons per day of residential and commercial food waste is generated.
- Less than 5% of commercial food waste is currently source separated. (Around 80-100 tpd)

*Sources: DSNY NYC Commercial Waste Study and NYC 2005 NYC Waste Characterization Study

Food Waste in NYC: Commercial Back-of-House

≥1,038 Tons Per Day of Back of House Commercial Food Waste



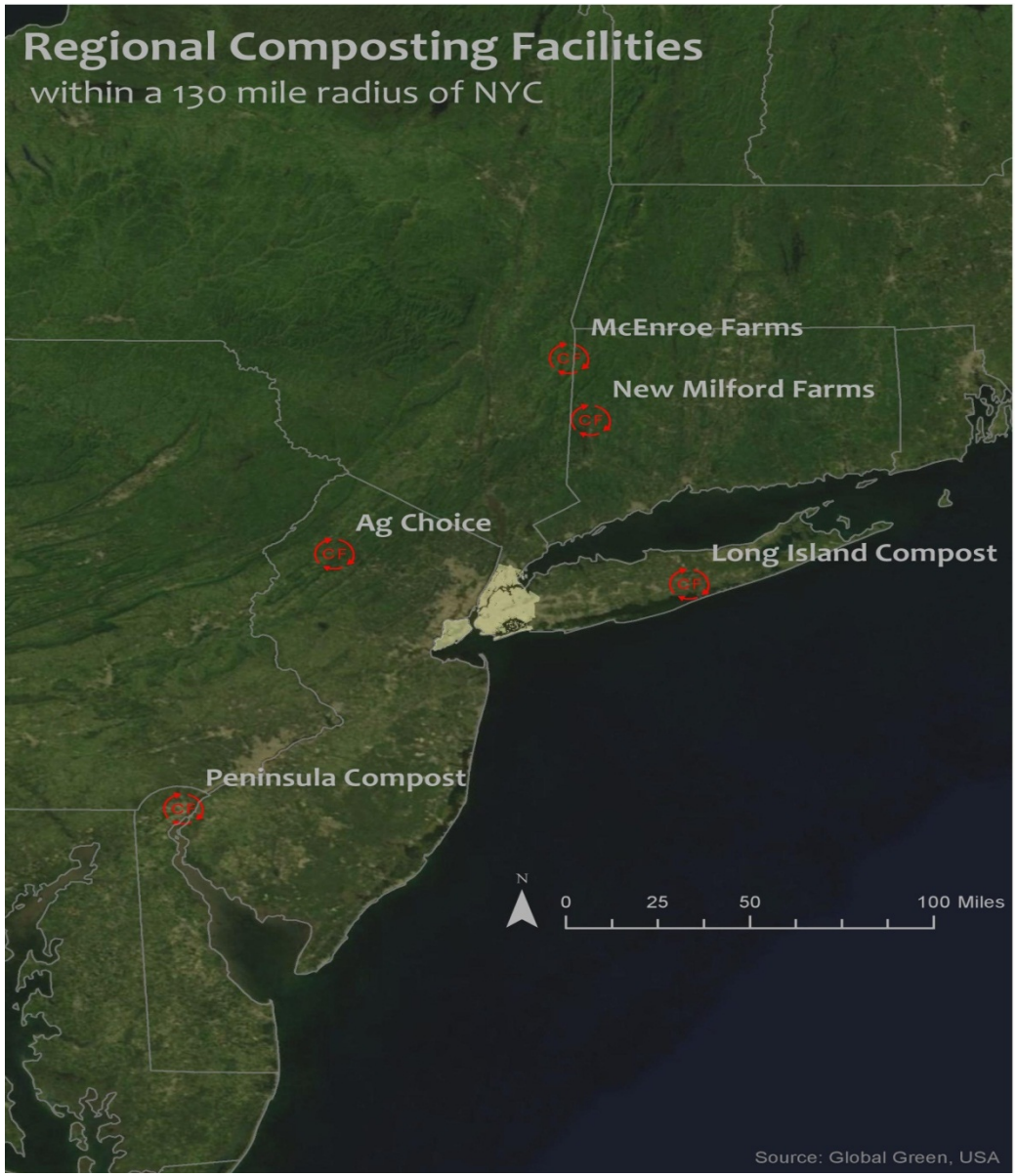
Source Reduction First

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
N
0
25
50
100 Miles
Source: Global Green, USA

Current Collection and Processing System

Regional Options

Facility	Distance from NYC	Can take meat waste?	Able to take contamination?
Peninsula Compost	130	Yes	Yes
New Milford Farms	83	Yes	Some
McEnroe Farms	100	Yes	Little to none
Ag-Choice	54	No	Little to none
Long Island Compost	62	No	Little to none

Economic Analysis of Organics and MSW

Peninsula Compost

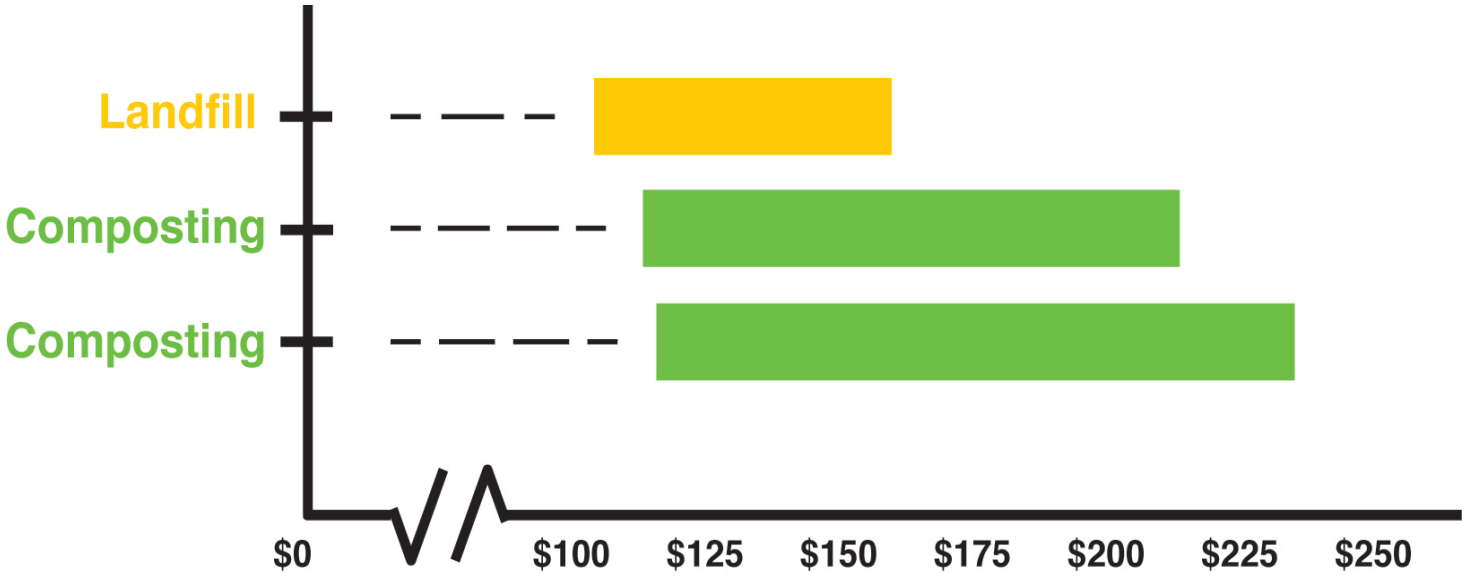
- Largest compost facility on East Coast, permitted for 550 tons per day
- Major outlet for NYC commercial food waste
- Gore system aerobic composting
- 150 tons per day of excess capacity

Economic Analysis of Organics and MSW

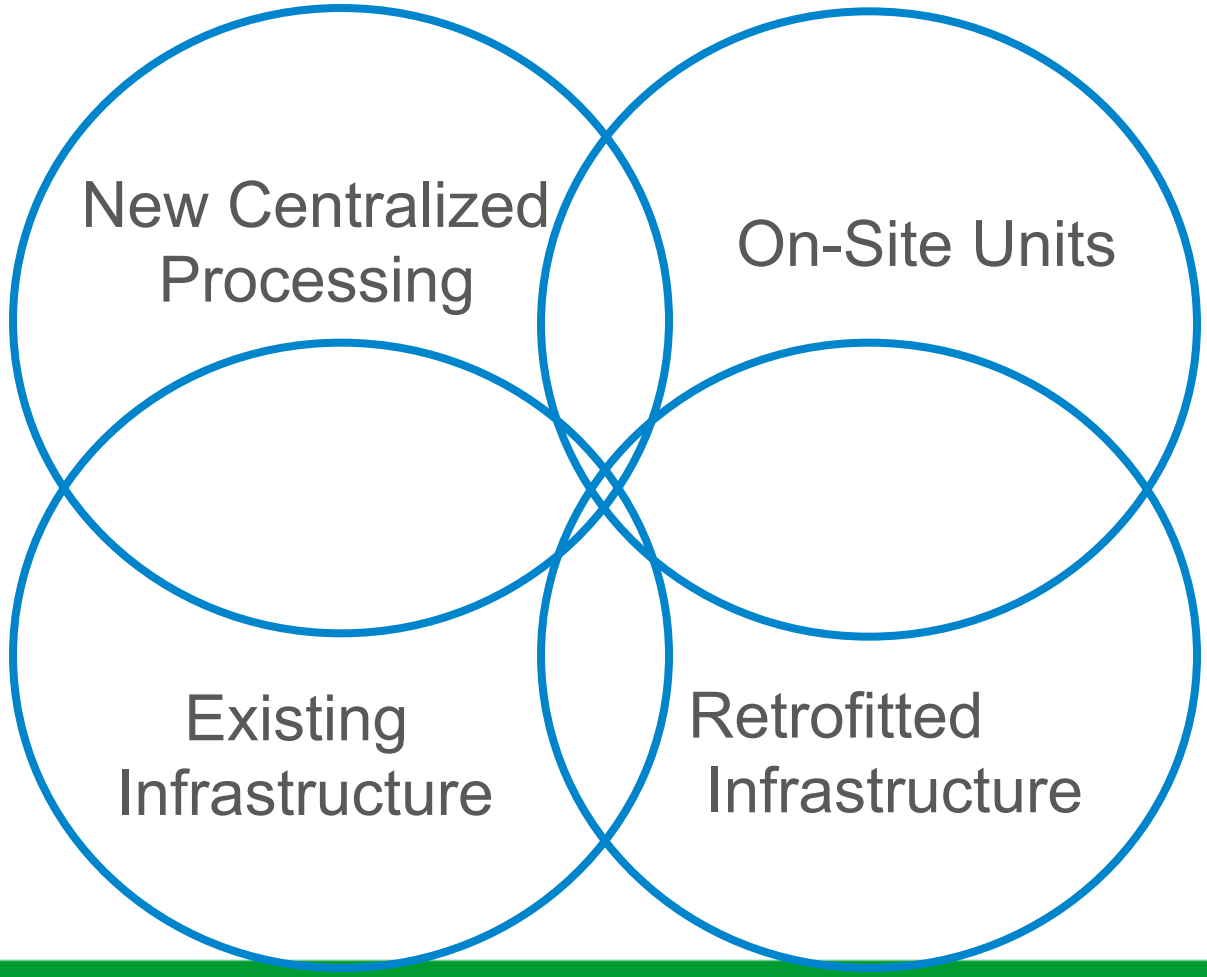
- **Composting source separated food waste at Peninsula Compost**
- **Compared with landfilling of comingled municipal solid waste**

Economic Analysis of Organics and MSW

Cost Per Ton for Landfill or Recovery



Scaling Up Organic Waste Diversion



Building Closer Processing Infrastructure

Existing, Retrofitted, and New Infrastructure

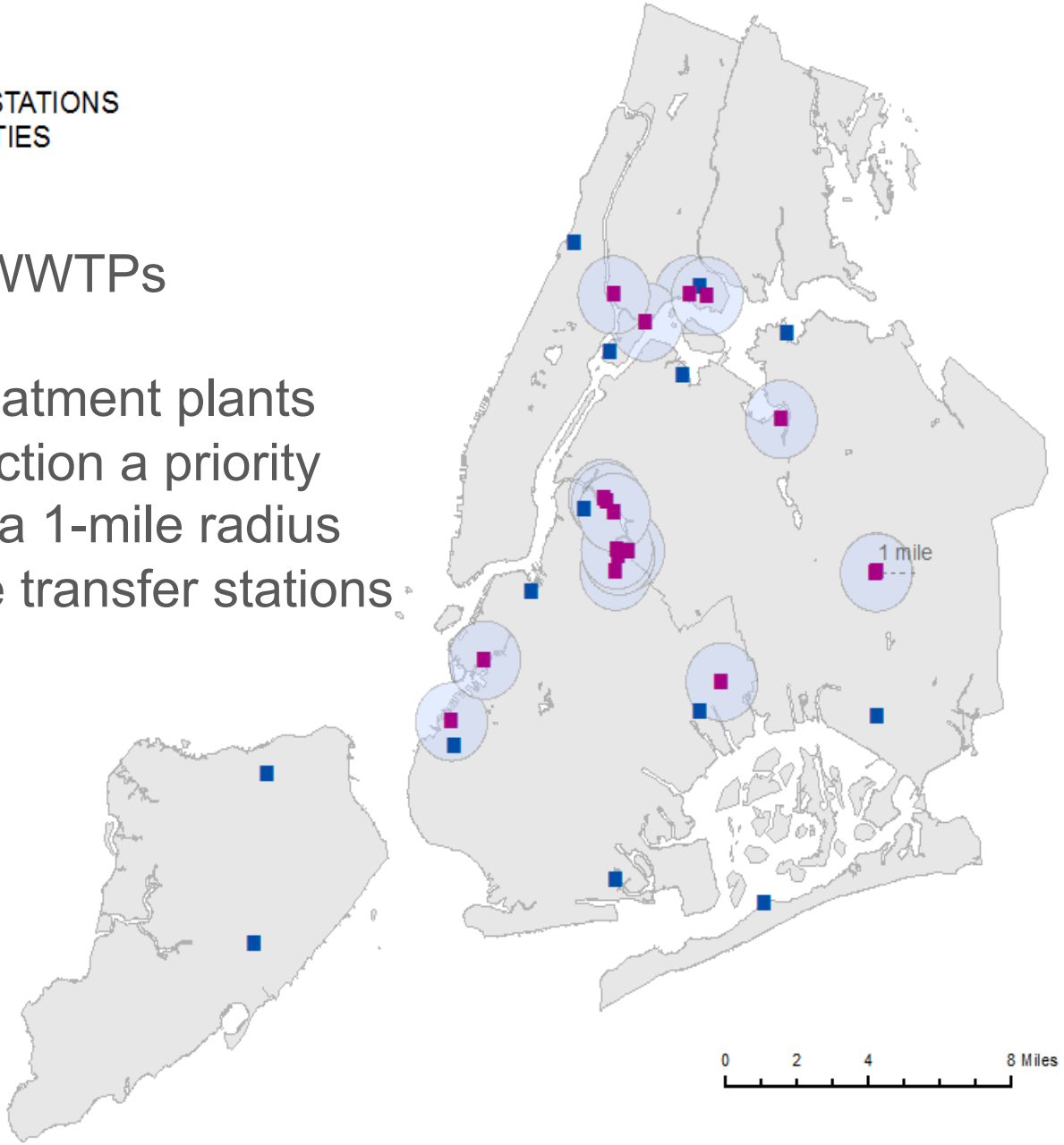
- Use of NYC Transfer Stations for Pre-Processing, Consolidating, and/or Processing Food Waste
- Co-digestion of Food Waste at NYC Wastewater Treatment Plants
- New Composting and Anaerobic Digestion Facilities in New York City or New Jersey

New York City

COMMERCIAL WASTE TRANSFER STATIONS
WASTEWATER TREATMENT FACILITIES

Transfer Stations & WWTPs

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



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

New York City

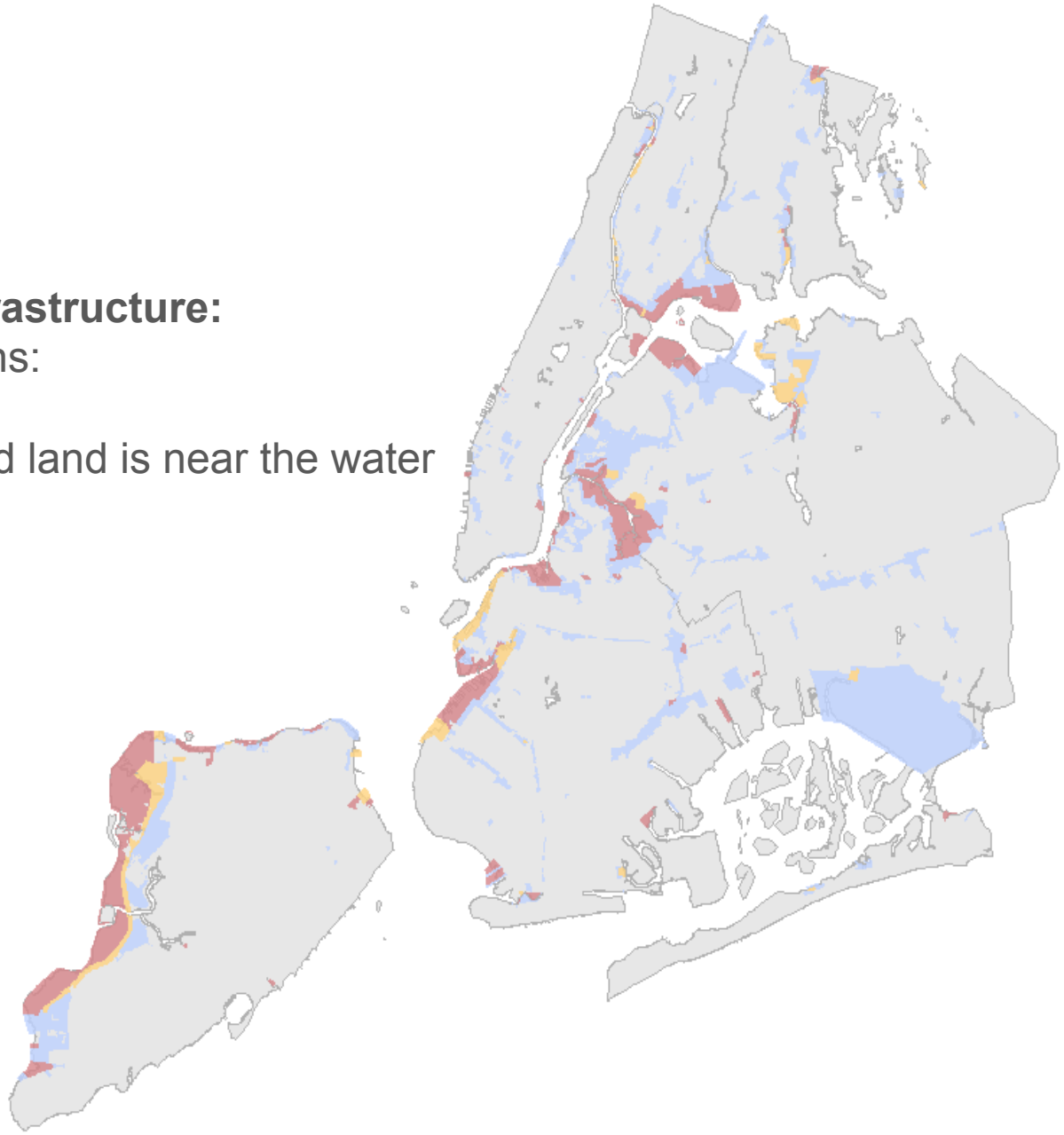
MANUFACTURING DISTRICTS

Siting in NYC

For building new infrastructure:

A few market conditions:

- M3 zoning preferred
- Much of the M3 zoned land is near the water



Source: NYC Department of City Planning.

Real Estate and Energy Markets

New York City Versus New Jersey Financial Comparison

	New York City	New Jersey (for properties evaluated near NYC)
Retail price per (kWh)	$0.21	$0.14*
Cost of industrial land (per SF)	$70-80 to $140 SF (M3 Zoning)**	$15-23**

*Average State-Wide Commercial Electricity Price for PSEG utility served areas (Source: Energy Information Administration)

** From conversations with real estate brokers

Organic Waste Recovery Model for Cities

Economics of Organics Recovery

- **Determine the economic viability of a food waste recovery program for New York City's commercial sector**
  - Real Estate and Energy Prices included for NYC and New Jersey
  - Anaerobic digestion, in-vessel, and aerated static pile evaluated

- **Preliminary analysis completed in fall 2012**

- **Next steps are to include cost information from reference facilities and incorporate different financing methods**

Community Engagement Framework

1. Identify Stakeholders

Possible Groups include - Residents, neighborhood groups, community boards, community Leaders, civic and recreational organizations, industry and business, environmental justice groups, elected officials, academic institutions, local media etc.

2. Design Engagement Approach

All three methods can and should be conducted simultaneously depending on the needs and wants of both the community and developers as well as the scale of the project.

3. Finalize and Submit Engagement Plan

A Public Participation Plan that consists of schedule of activities is required as part of the permitting process. Specifics requirements of the plan will be based on the type of project.

Types of Engagement Approaches

	Best Practices
Informative* Educational outreach to provide information on project details and expected impacts. Includes flyers, pamphlets, presentations, etc.	Conduct general outreach using multiple media and languages; ensure material is clear, concise, and widely distributed; initiate specific and targeted contact with community leaders.
Responsive* Public meetings to encourage discussion of stakeholder concerns and opinions on the proposed project.	Identify community specific needs that must be considered, encourage open discussion, hold meetings at easily accessible times and locations, provide technical experts when necessary.
Collaborative Coordination with a Stakeholder Committee that participates in decision-making and forms Community Benefit Agreements (CBA)s.	Ensure committee members are representative of stakeholders, agree on decision-making methods. Construct CBAs that are inclusive, legally enforceable, and address a range of community interests.

* Informative and Responsive engagement is required by permit CP29

Scaling Up Organic Waste Diversion

Opportunities and Challenges

- Building participation by restaurants, grocers, and schools
- Scaling up infrastructure as feedstock grows (and visa versa)
- Planning for multiple processing facilities or methods
- Growing local compost markets

Thank You

Survey Results

1 of 2

Item	Value
NYC commercial putrescible transfer station tip fee	$65–$80
Long-haul truckload (ton)	20
Cost per mile (using 20-ton long haul vehicle)	$4
8-hour Collection route (weight of garbage) – tons (2 routes completed)	10–16
8-hour Collection route (weight of food waste) – tons	8–16
Cost of waste handling at transfer station (per ton)	$4–10

Survey Results

2 of 2

Item	Value
Labor and fuel for in-city solid waste collection	$75-$100
Shift (hours)	8
Cost of Refuse Collection Vehicle	$250,000
Garbage Truck Life Span	12 years (assuming 300,000 miles driven over lifespan)
Combined Cost of Long Haul Tractor & Trailer	$123,000 - $148,000
Long Haul Tractor & Trailer Life Span	12
Peninsula Compost Wilmington, DE tip fee	$45-$50

Cost Comparison

Totals

Landfill (per ton)	Composting (per ton)	
Commercial Putrescible Collection & Disposal	Collection and transfer to a 20 ton long-haul truck	Collection truck directly to compost facility
$103-$160	$113-$212	$115-$233