



Implementing Sustainable Waste Management Practices

October 23, 2012

Hynes Convention Center

BARR FOUNDATION




Challenge for Sustainability



Challenge Participants




Challenge Participants



A map of Cambridge, Massachusetts, showing the area around the Charles River and the MIT campus. Several blue location pins are placed on the map, indicating the locations of the challenge participants. The pins are clustered in the central and eastern parts of the city, near the river and the main thoroughfares.

	2010	2011	2012
Properties	18	37	77
Square Feet	5 million	15 million	22 million
Employees	28,446	47,289	62,474
kWh	103 million	284 million	359 million



A map of Boston, Massachusetts, showing the area around the city center and the harbor. Several blue location pins are placed on the map, indicating the locations of the challenge participants. The pins are clustered in the central and eastern parts of the city, near the harbor and the main thoroughfares.

Events & Meetings

Monthly Meetings

- Private to Challenge participants
- Recaps and meeting resources on event webpage

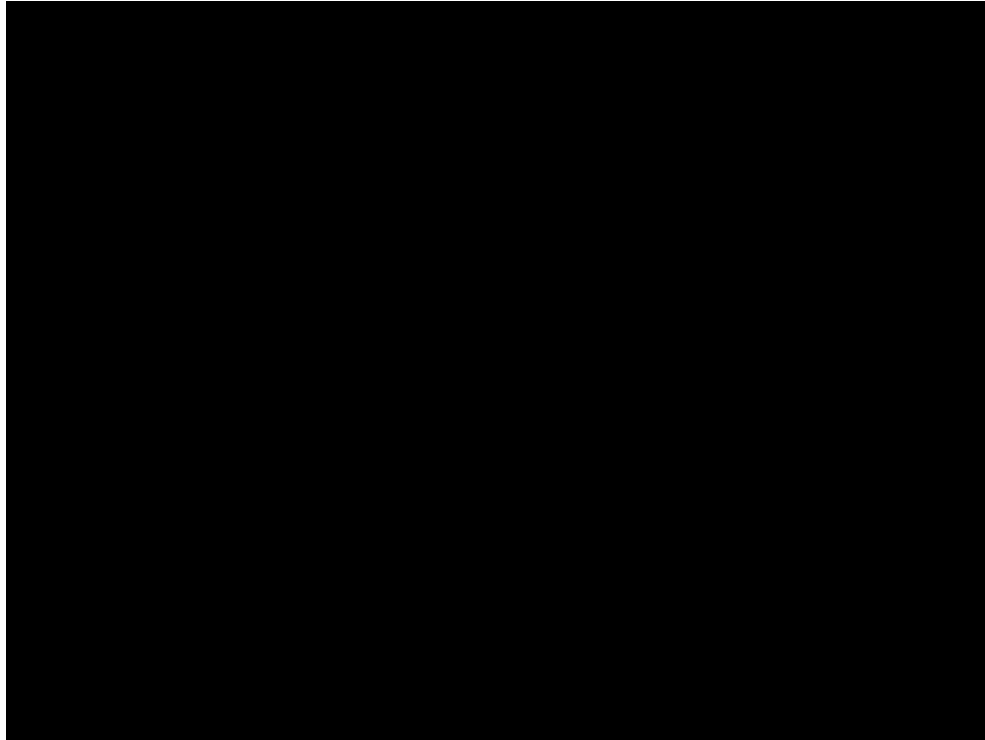


Workshops

- Open to the Public



Micro Documentary – Build It



Sister Programs

SEATTLE
2030
DISTRICT

BETTERBRICKS

GO GREEN
GREEN BUSINESS

denver
energy
CHALLENGE

KILOWATT
CRACKDOWN

Chicago
Green Office
Challenge

KIL WATT
CRACKDOWN
MIDLAND

ABC
CHALLENGE for
SUSTAINABILITY
Business and Institutional Leaders
Working Toward a Sustainable City

GREEN BUSINESS
CHALLENGE

Green
Office
Challenge
HOUSTON



2011 Success Story

- 8,500,000 kWh reduced
- \$425,000 – estimated savings
 - 730 homes per year



- 2100 Olympic Pools
- 11 million gallons



2011 Success Story – 370 Practices Adopted

Tenants



Audit
Employee Pledge
Energy Management Plan
Buy Local Policy
Coordinate Sustainability Efforts
with Property Manager

Buildings



Green Awareness Day
Green Team
Audit
Motion Sensor
Composting

ABC's Waste Management



Clear signage for separating different types of waste



Employees volunteered to give up large trash bins at desks

In-office compost bin for food waste



Ready to Join the Challenge?

- Free for members of A Better City
- Fee for non-ABC members
- [Registration Page](#)
- www.challengeforsustainability.org



A BETTER CITY

CHALLENGE for
SUSTAINABILITY

*Business and Institutional Leaders
Working Toward a Sustainable City*

Thanks to our Funders!





Introduction to ***MASSRECYCLE***

Presented by Edward Hsieh,
Executive Director, MassRecycle

Introduction to ***MASSRECYCLE***

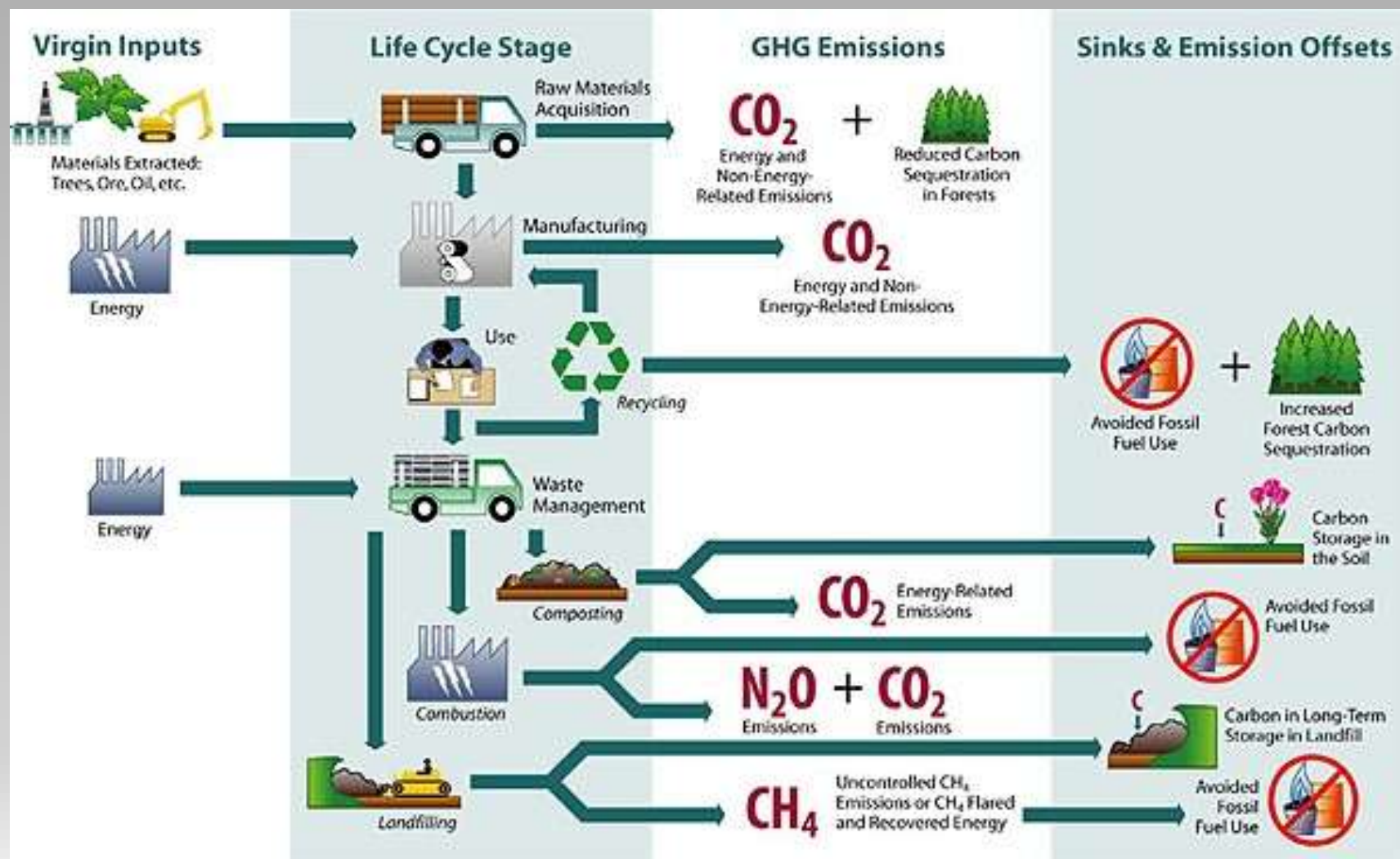
- MassRecycle's Mission
 - MassRecycle is the statewide coalition of individuals, municipalities, businesses, institutions and nonprofits dedicated to promoting and realizing the economic, social and environmental benefits resulting from reducing, reusing and recycling, and to increase the utilization of recycled products.

Introduction to *MASSRECYCLE*

- Our sponsors



Introduction to *MASSRECYCLE*



Introduction to *MASSRECYCLE*

- Our programs
 - Largest Recycling & Organics Conference in the state
 - Annual Recycling Awards
 - Advocacy
 - Roundtables
 - Tours and networking events
 - Website Portal and resources



Introduction to *MASSRECYCLE*

- Focus issues
 - Organics Waste Ban
 - Electronics EPR
 - Mandatory Waste Reduction
 - Updated Bottle Bill
 - Use of More Recycled Products in DOT Projects



Hauler Panel

Craig Lovett, Mass Hauling / Capital Paper Recycling



Adam Mitchell, Save That Stuff



2014 Organics **Waste Ban**

- Waste Bans
 - Massachusetts does not have mandatory waste reduction or recycling statewide
 - The State influences proper diversion of materials by banning certain materials from being disposed and/or transported for disposal within the Commonwealth

2014 Organics **Waste Ban**

- Organics Waste Ban
 - Currently being hashed out by DEP SWAC to be launched summer 2014
 - Institutions regardless of sector that produce more than one ton of organics/week are impacted
 - DEP believes that this equates to about 3,000 entities
 - Considering allowing institutions to voluntarily certify compliance with the ban, giving them a pass on the first violation

2014 Organics **Waste Ban**

- MassRecycle's Role
 - Staff and Board Members involved at SWAC
 - Roundtables to discuss how the ban will impact infrastructure
 - Annual organics conference





Future Trends in Recycling for MA Businesses

Craig Lovett, LEED AP O+M
Mass Hauling / Capital Paper Recycling

What are the Future Trends in Recycling? (2007 Predictions)

- Mass Waste Ban Regulations are being enforced!
- Boston's "green" building requirements
- LEEDS certification for new & existing Buildings
- Property Manager bonuses

What are the Future Trends in Recycling? (2007 Predictions)

- Mass Waste Ban Regulations are being enforced!
 - Recyclable material must be removed from the waste stream
 - First citations were issued in January 2007!
 - Names of non-compliant haulers and trash producers were published in newspapers

What are the Future Trends in Recycling? (2007 Predictions)

- Mass Waste Ban Regulations are being enforced!
 - Recyclable material must be removed from the waste stream
 - First citations were issued in January 2007!
 - Names of non-compliant haulers and trash producers were published in newspapers
- **2012 Update: Accurate, but did not affect many sites!**

What are the Future Trends in Recycling? (2007 Predictions)

- Boston's "green" building requirements
 - Mayor Menino and Governor Patrick have both instituted new protocols for 2007

What are the Future Trends in Recycling? (2007 Predictions)

- Boston's "green" building requirements
 - Mayor Menino and Governor Patrick have both instituted new protocols for 2007
- **2012 Update: Accurate.**
 - Every new building built in Boston had to meet or exceed LEED building codes (without specifically applying for LEED certification)
 - This influenced, but was not required for build-outs & fit ups in existing buildings
 - Waste metric reporting became commonplace

What are the Future Trends in Recycling? (2007 Predictions)

- LEEDS certification for new & existing Buildings

What are the Future Trends in Recycling? (2007 Predictions)

- LEED~~S~~ certification for new & existing Buildings
- **2012 Update: Accurate.**
 - >60% of top 50 high rises and > 90% of top 10 high rises sought LEED certification
 - New focus on waste & recycling LEED metrics
 - Waste & recycling metric reporting became commonplace

What are the Future Trends in Recycling? (2007 Predictions)

- Property Manager bonuses
 - Some companies in Boston are including recycling efforts in the computation of bonuses!

What are the Future Trends in Recycling? (2007 Predictions)

- Property Manager bonuses
 - Some companies in Boston are including recycling efforts in the computation of bonuses!
- **2012 Update: Wrong! But...**
 - **Instead of being a differentiation point, recycling efforts became “must-have” sustainability efforts**
 - **In a downward economy, green initiatives were viewed as valuable “low-cost, no-cost” improvements**

What are the Future Trends in Recycling? (2012 Predictions)

- Organics will play an increasing role in recycling
 - DEP Organics ban coming in 2014
 - Will affect major producers most and first
 - Food producers
 - Colleges
 - Will be highly influenced by commercial organics sites

What are the Future Trends in Recycling? (2012 Predictions)

- LEED certification will lose momentum for existing buildings
 - Few unexamined buildings in greater Boston
 - Re-certification will be influenced by economics
 - Exception: EOP buildings

What are the Future Trends in Recycling? (2012 Predictions)

- In-house Digesters will continue to emerge, but not gain significant traction
 - Payback period > 7 years
 - Hospitals
 - Colleges
 - Technology is evolving
 - MA solid waste regulations act as both a push and a pull

What are the Future Trends in Recycling? (2012 Predictions)

- As competition increases, waste and recycling services will get cheaper and quality will suffer
 - Industry consolidation = fewer competitors
 - Waste “brokers” focus on “spreadsheet savings” versus real-world costs

What are the Future Trends in Recycling? (2012 Predictions)

- Tenants (& employees) will (continue to) drive many green initiatives
 - Tenants got a “voice” in recent years and will not lose it
 - Company initiatives are driving building initiatives
 - Green needs = innovation!



save THAT Stuff^{INC}

One goal. Zero waste.

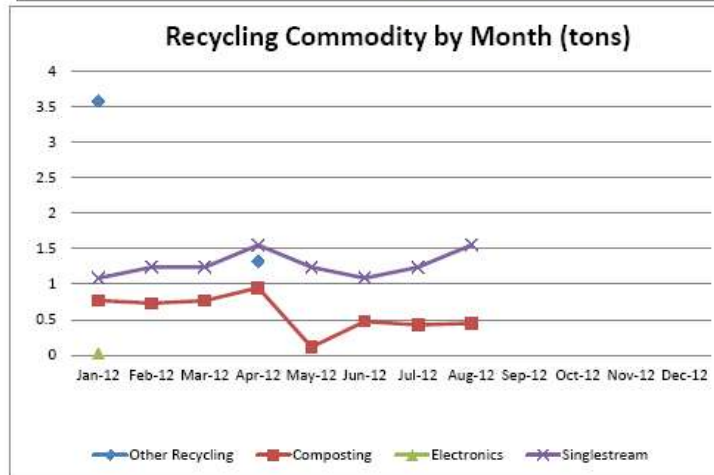
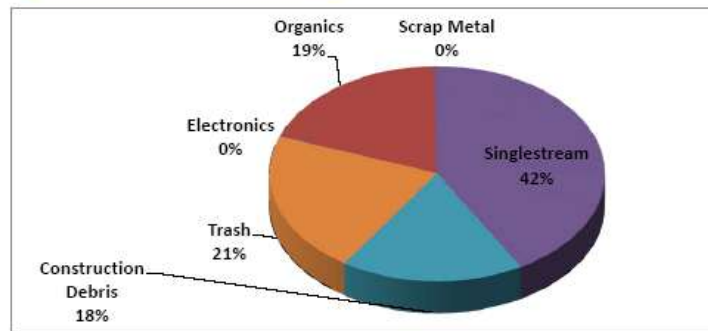
Implementing Sustainable Waste Management Practices at the Work Site
A Better City and MassRecycle
October 23, 2012

Becoming a Zero Waste Business

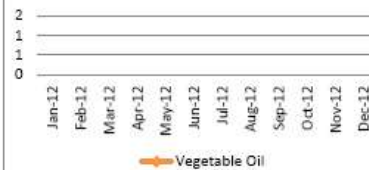
1. Baseline
2. Contracts and Costs
3. Target Material
4. Waste Reduction
5. Program Design
6. Implement and Monitor



1. Baseline



Vegetable Oil Recycling (gallons)



2012 Landfill Avoidance

	Recycled		Landfilled	
	Tons	%	Tons	%
Jan	5.460	89%	0.6800	11%
Feb	1.970	75%	0.6460	25%
Mar	2.008	75%	0.6800	25%
Apr	3.820	85%	0.6800	15%
May	1.353	67%	0.6800	33%
Jun	1.560	70%	0.6800	30%
Jul	1.665	78%	0.4680	22%
Aug	2.000	75%	0.6800	25%
Sep				
Oct				
Nov				
Dec				
TOAL	19.836	79%	5.19	21%

Diversion Rates



2. Costs and Contracts

Garbage Express : *We don't Refuse.*

20 Incinerator lane
Phone 281-555-1212
Fax 312-555-1212

INVOICE

INVOICE #100
DATE: 6/1/2012

TO:
Absent Management
10 Waveover Road
Sample, MA

FOR:
June Service
P.O. # 555

DATE	TICKET	DESCRIPTION	QUANTITY	RATE	AMOUNT
6/1/12	1231	Disposal per ton	2.67		234.96
6/1/12	1231	20 Yd compactor	1.00		150.00
6/8/12	5111	Disposal per ton	2.32		204.16
6/8/12	5111	20 Yd compactor	1.00		150.00
6/19/12	2121	Disposal per ton	1.43		125.84
6/19/12	2121	Minimum tonnage charge	.57		50.16
6/19/12	2121	20 Yd compactor	1.00		150.00
6/1/12		1.00 20 Yd container service charge	1.00		450.00
6/1/12		1.00 Administrative fee	1.00		20.00
6/1/12		Total Fuel/Environmental Recovery Fee			307.02
TOTAL CURRENT CHARGES					1,842.14

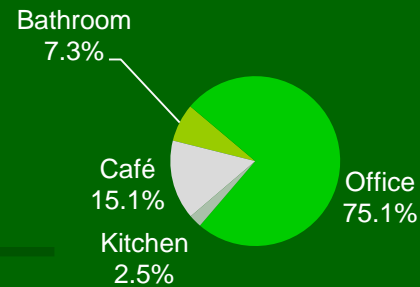
Make all checks payable to
Total due in 15 days. Overdue accounts subject to a service charge of 1% per month.



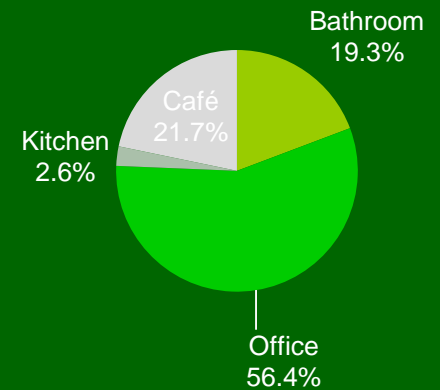
3. Target Material



Where's the trash coming from?



Pre-Sort



Post-sort

save THAT Stuff

4. Waste Reduction



5. Program Design

- Desk-side and intermediate



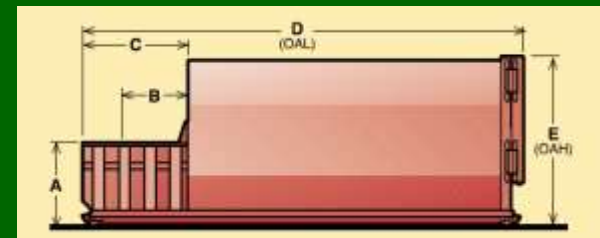
- Central storage dumpsters



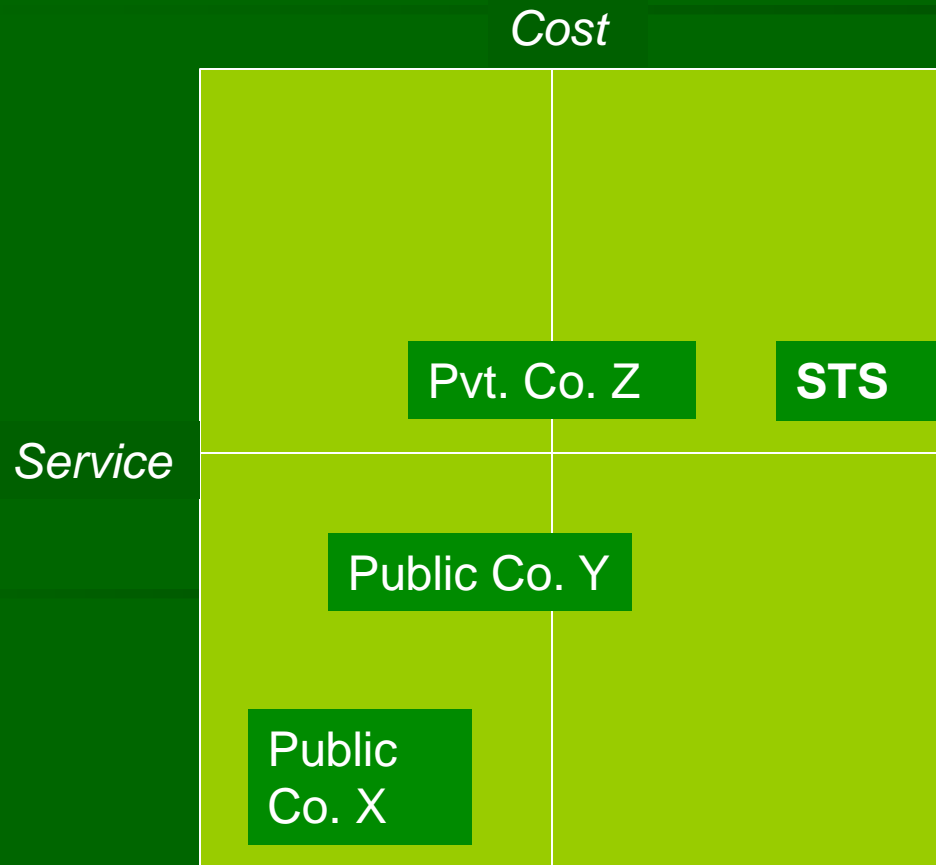
- Central Storage Carts



- Central storage compactors



6. Implement: What do you pay for?



Questions



617.241.9998

office paper recycling
scrap metal
food waste
cardboard
mixed paper
compactors
electronics
wood pallets
zero waste events
baling machines
cans and bottles
composting
special event recycling
www.savethatstuff.com

Business Panel

Leah Ricci, P&G Gillette



Jeff Hanulec, Sheraton Hotels



Dan Shanahan, Boston Properties



Chris West, MCCA



Waste Management Workshop

Prudential Center Organics & Recycling



Premier Properties. Core Markets. Experienced Leadership.

Prudential Center Organics Program

- Pilot program started in 2008 with Legal Sea Foods
- September 2011 - installation and modification of a dedicated 35 yard compactor
- Currently includes (2) full service office kitchens, (6) full service restaurants, other eateries and operations
- Averaging approximately 20 tons per month



Prudential Center Organics Program – Lessons Learned

- Control roll out to identify hurdles
- Bin size (32 gallons)
- Pre-consumer vs. Post-consumer waste
- Moisture content – decomposition



Prudential Center - Recycling

- Recent waste audit identified over 60% of office waste in trash stream should have been recycled.
- Elimination of desk side trash in the office environment. . .

Single-Stream RECYCLING

If it's clean and made of paper, metal, glass or plastic, put it in the recycle bin!



Empty plastics and glass
(with ♻️, #1-#7 on the bottom)



Metals
(empty soda cans, staples, paperclips)



All paper and cardboard
(newspapers, magazines, colored paper, window envelopes, notebooks)

 **Boston Properties** Call 617.236.2345 with any questions.

Forward-Looking Statement

This presentation may contain forward-looking statements within the meaning of the Federal securities laws. You can identify these statements by our use of the words “anticipate,” “believe,” “estimate,” “expect,” “intend,” “may,” “might,” “plan,” “project,” “should,” “will” and similar expressions which do not relate to historical matters. You should exercise caution in interpreting and relying on forward-looking statements because they involve known and unknown risks, uncertainties and other factors which are, in some cases, beyond Boston Properties’ control and could cause actual results, performance or achievements to differ materially from those expressed or implied by the forward-looking statements. These factors include, without limitation, the ability to enter into new leases or renew leases on favorable terms, dependence on tenants’ financial condition, the uncertainties of real estate development, acquisition and disposition activity, the ability to effectively integrate acquisitions, the costs and availability of financing, the effectiveness of our interest rate hedging contracts, the ability of our joint venture partners to satisfy their obligations, the effects of local economic and market conditions, the effects of acquisitions, dispositions and possible impairment charges on our operating results, the impact of newly adopted accounting principles on the Company’s accounting policies and on period-to-period comparisons of financial results, regulatory changes and other risks and uncertainties detailed from time to time in the Company’s filings with the Securities and Exchange Commission. Boston Properties does not undertake a duty to update or revise any forward-looking statement whether as a result of new information, future events or otherwise.





Sheraton Boston Hotel

Recycling / Composting / Waste Diversion



Single Stream Recycling Program

Partner: Save that Stuff (since March 2012)

Paper, plastics, metals and glass disposed into vendor-provided totters for collection

- ✓ 6.5 tons of comingled waste collected
- ✓ One-time pick up of 3.15 tons of scrap metal
- ✓ Zero refused recycling for contamination



Cardboard Recycling Program

Partner: Waste Management

All cardboard products disposed into in vendor-provided 30-yard compactor for collection

- ✓ 23 tons of cardboard collected
- ✓ Simple process for team to follow
- ✓ Receive payment for clean cardboard



Organic Waste Composting Program

Partner: Herb's Disposal

All composted waste disposed into vendor-provided yellow barrels with biodegradable liners for collection

- ✓ Food waste is the largest contributor of “trash” in the full-service hospitality industry
- ✓ 90 tons of organic matter collected YTD through August

** 90 tons of food waste = the same amount of food waste produced by 422 American homes in one year.

Source: EPA



Additional Diversion Programs



Partner: Clean the World

All used soaps and bathroom amenities collected and shipped to an organization for donation to communities in need

✓ 2,894 lbs collected YTD



Partner: EcoBuilding Bargains

One time collection of unneeded attic stock paint

✓ Over 500 gallons collected for recycling

Partner: Grainger

Continuous collection of batteries, light bulbs and ballasts for recycling

Partner: AP Frycool

Continuous collection of fryer oil for recycling to bio-diesel – YTD converted 13000 #s of fryer grease to 1800 gallons of BIO fuel





Implementing Sustainable Waste
Management October 23, 2012
Site Sustainability Leader: Leah Ricci



Agenda

- P&G Sustainability Goals
- P&G Waste Strategy
- Site Waste Approach and Results



The Power of P&G's Purpose:

Touch and improve lives,
now and for generations to come.



The world's largest consumer packaged goods company

Touching lives, improving life. **P&G**

Long-Term Environmental Sustainability Vision



Using 100% renewable materials or recycle for all our products and packaging



Designing products that delight consumers while maximizing the conservation of resources



Having zero consumer or manufacturing waste go to landfills



Powering our plants with 100% renewable energy



P&G 2020 Sustainability Goals

2020 Goals for Products ^{*vs 2010 baseline}

Replace Petroleum-Based Materials with Sustainably Sourced Renewable Materials	25%*
Cold Water Washing	70% of total washing machine loads
Packaging Reduction	20% (per consumer use)*
Consumer solid waste	Pilot studies in both developed and developing markets to understand how to eliminate landfilled/ dumped consumer solid waste

2020 Goals for Operations ^{*vs 2010 baseline}

Operations Footprint	20% Reduction per MSU (Internal goal)
Renewable Energy Powering our Plants	30%
Manufacturing Waste	< 0.5% (disposed)
Truck Transportation Reduction	20% (km/unit of volume)*



Global Asset Recovery Program: Waste Stream Management

Before: ~55% Beneficial Reuse for P&G, Complex, Time Intensive





Site Solution Provider Progression

SSP Phase 1

Site Audit

SSP Phase II

SSP Phase III

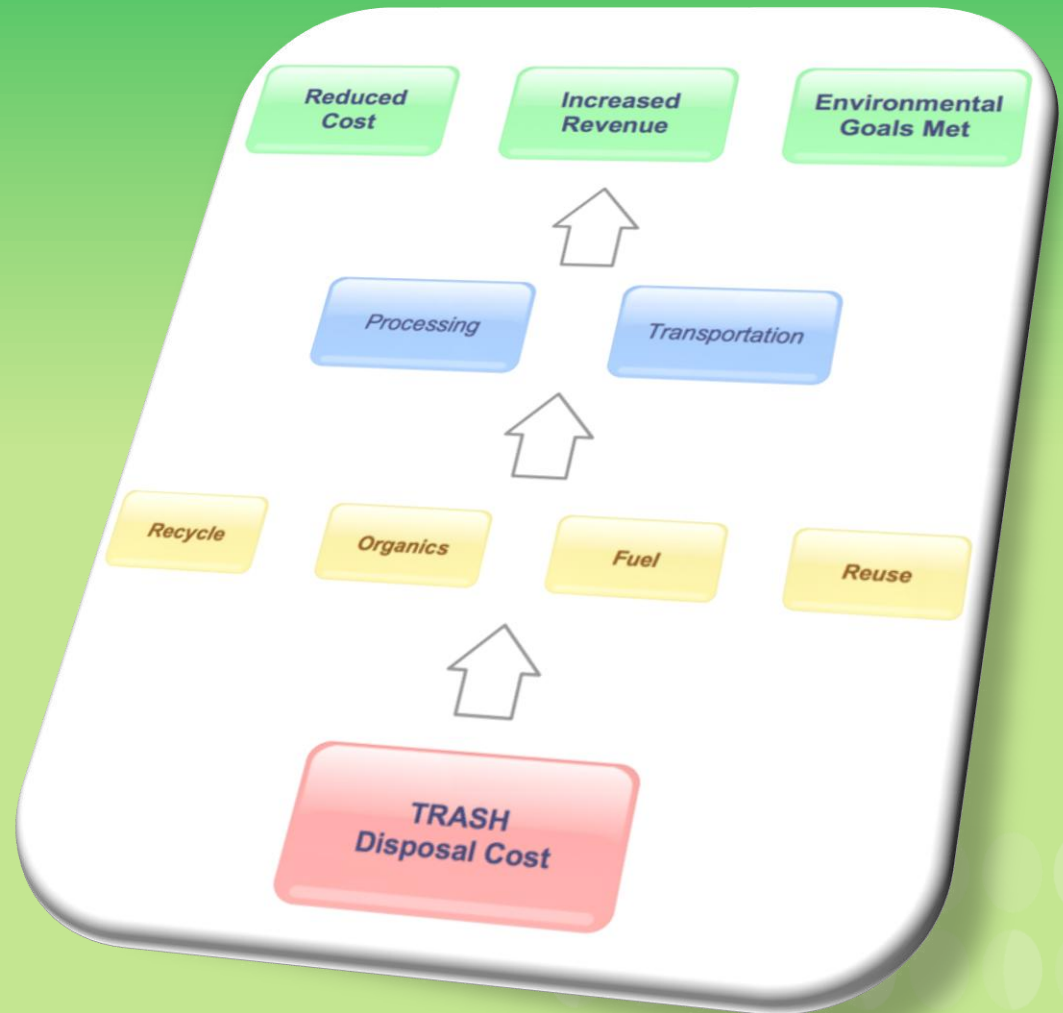


Rand-Whitney Recycling

Creating Value Through Materials Recovery

Recoverable materials in the waste stream become a resource when market knowledge and creative solutions are applied.

Integration of logistics and materials management reduces disposal expenses, increases profitability and achieves sustainability goals.



Gillette World Shaving Headquarters

Overview

Key Facts:

Plant Built: 1903 (1st bldg), 1963 (last bldg)

P&G Acquisition: 2005

Property Area: 45 acres

Building Area : ~1.2 million sq ft (425,000 mfg)

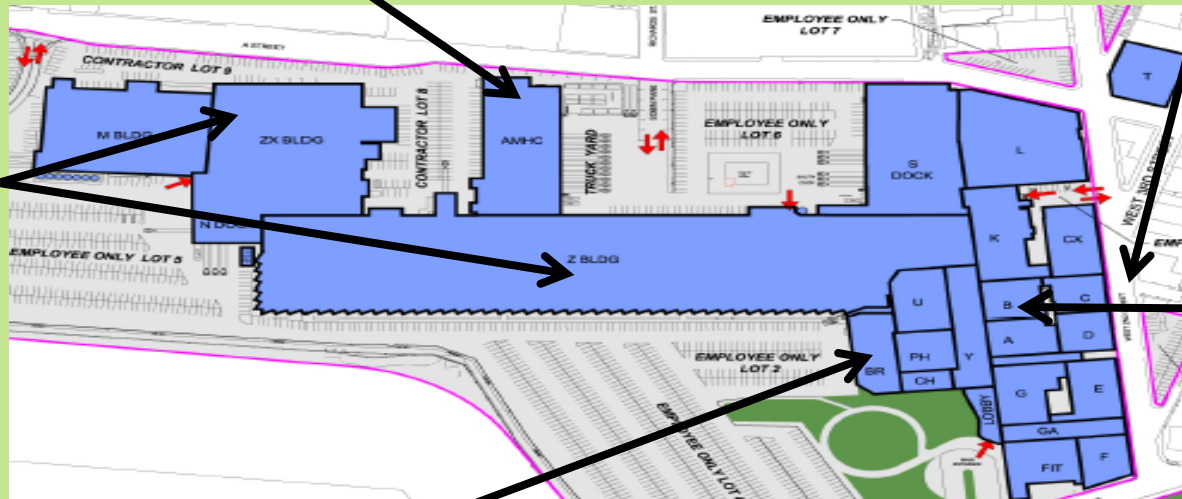
Enrollment: ~1500 employees



Automated
Warehouse

Engineering Shops,
Labs, Offices

Manufacturing
Plant



Cafeteria

Powerhouse

Sustainability Impact

Completed ~ 44 Projects Since FY '09-'10; Typical Simple Payback ~ <3-4 years

** Does not include Gas Turbine*



Enough energy
saved to power
~**1150** homes



Enough water
saved to fill ~**25**
million bottles
of water



>99% Solid
Waste Beneficial
Reuse Rate

Site Sustainability Structure

4 Teams Drive Site Action Plan

Corporate Sustainability Goals/Strategies & Site Goals



Partnership Engagement

Leverage Partnerships to Complement Site Teams



Internal Networks

- Regional
- Cross Functional

Energy/Waste

- Energy Incentives & Project Support: NSTAR
- Energy Audits/Turn Key: Woodstone/Siemens/MIT
- Waste: SSP Rand-Whitney & Janitorial Vendor Sodexo

Local Networks

- A Better City
- Greenovate
- Pacesetter
- Conferences

P&G Gillette South Boston Waste Results Overview

Strong team and SSP Partnership creates significant improvement

- Before SSP & Recycling Team:
 - ~77% Recycling/Beneficial Reuse Rate
- After SSP & Recycling Team:
 - >99% Beneficial Reuse Rate
 - ~90% Recycling Rate (20+ component streams)
 - ~40 tons composted/yr
 - ~50% Reduction in Waste Costs
 - Ensured top Recycling Value – tied to market index
 - Improved accountability



Recycled Streams

Designated areas are used for typical streams and a call center is used for unique requests.

Office



- Paper, Plastic, Food
- Cardboard
- Batteries
- Lighting
- Office Furniture
- Electronics
- Ink Cartridges
- Cleanouts

Industrial

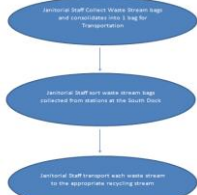


- Production Scrap Metal/Plastic/Product
- Other Scrap Metal/Plastic
- Clear plastic film/bags
- Plastic strapping
- Scrap Wood
- Packaging

Founding of New Recycling Program

Internal Champion and Leadership Support is Key

GoZeroWaste Collection Process



Mapped Waste Streams & Identified Best Uses
(SSP & Champ)



Established Recycling Team



Setup Recycling Areas/Processes



Communicated Wins

Recycling Program Expansion

Communicating Wins is Critical to Continuous Improvement & Expansion



Broadened Team
Scope & Tied it to a
Visible Initiative



Expansion &
Continuous
Improvement

Go Zero Waste Place Pilots

P&G pilot data shows that employees with individual trashcans tend to recycle less.

- Site Pilot:
 - 70% employees said they recycled more
 - 90% employees said they composted more
- Site Wide Program:
 - **82%** of the 1500 employees turned in their bins
 - Key to success: Floor champions & Leadership



Additional Sustainability Work

Beyond Waste



Energy/Water

- Installed Combined Cycle Gas Turbine
- Lighting Improvements saving ~ 1.2MM kwh/yr
- Reduced HVAC Usage saving ~8MM kwh/yr
- Improved RO system saving ~ 2MM gallons/yr
- Kicking off Persistent Commissioning & Metering



Employee Engagement - Commuting

- Green Lot
- Bike Hubway Station/Bike Room
- Earth Week, Digital Newsletter and Signage

Site Sustainability Awards

Internal & External



P&G Gillette

Questions?






October 23, 2012

MCCA WASTE MANAGEMENT


Christopher West
Manager of Product Management

AGENDA


- Massachusetts Convention Center Authority (MCCA)
 - Solid Waste
 - Past Waste Management Practices
 - Goals
 - Current Waste Management Practices
 - Recommendations, Challenges & Achievements
- 

MCCA

- **MCCA Properties**

- Boston Convention & Exhibition Center – 1.2M Sq.Ft.
 - Hynes Convention Center– 400K Sq.Ft.
 - MassMutual Center – 100K Sq.Ft
 - Boston Common Garage –1,300 Spaces
 - 350+ Employees
- 

MCCA

- **Annual Figures**
 - 230 Events
 - 800,000 Attendees
 - 550,000 Hotel room nights
 - \$500M Economic Impact
 - \$25M Tax Benefit
- 


Solid Waste




Solid Waste Materials

- Cardboard
- Metal
- Aluminum
- **Plastic wrap**
- **Carpet and carpet padding**
- Pallets
- Low voltage cabling
- Kitchen cooking oils and grease
- Mixed office paper including
- newspapers
- junk mail
- envelopes
- E-waste
- aluminum food containers
- glass bottles
- plastic bottles and cups
- plastic containers
- **food waste**

PAST WASTE MANAGEMENT PRACTICES

- **Hauler**
 - Dual responsibility
 - Tonnage tracking & reporting
 - **Management Practices**
 - Lack of communication to stakeholders
 - Attendee convenience (low)
 - 3rd Party guidelines and enforcement
- 

GOALS

- Improve sustainability practices
 - 40% Diversion rate
 - Operating expense reduction
- 

CURRENT WASTE MANAGEMENT PRACTICES

- **New hauler**
 - Recycling (industry) experts
 - Reliable tracking & reporting method
 - Reasonable fees and revenue sharing



CURRENT WASTE MANAGEMENT PRACTICES

- New



MIXED
OFFICE PAPER. NEW



CARD



MCCA
MASSACHUSETTS CONVENTION
CENTER AUTHORITY

saveTHATStuff!
WE'LL SAVE IT.

**PLASTIC
FILM**

RECYCLING
CLEAN/DRY PALLET WRAP.
BUBBLE WRAP. CLEAR BAGS.
PILLOW PACKAGING. PLASTIC
OVERWRAP. DRY CLEANING
BAGS. PRODUCE BAGS.




MCCA
MASSACHUSETTS CONVENTION
CENTER AUTHORITY


saveTHATStuff!
WE'LL SAVE IT.

RECYCLING


CURRENT WASTE MANAGEMENT PRACTICES

- Management
 - Communication
 - Translated value to colleagues
 - Continuous assessment
 - Lead by example
- 

CHALLENGES

- Monitoring vendors, contractors and 3rd party affiliates
 - C & D waste
 - New sources of education & motivation
 - Contamination
- 

RECOMMENDATIONS

- Strengthen partnership w/hauler
 - Continuous evaluation of waste stream
 - Benchmark
 - Communicate w/stakeholders
- 

ACHIEVEMENTS

Conventions C.A.R.E.



ACHIEVEMENTS

Compost



ACHIEVEMENTS

Polyethylene



ACHIEVEMENTS

Hynes Chairs



ACHIEVEMENTS

MCCA GO Green Team





October 23, 2012

MCCA WASTE MANAGEMENT

Christopher West
Manager of Product Management

Resources

- Mihir Parikh, A Better City – mparikh@abettercity.org
- Edward Hsieh, Mass Recycle – director@massrecycle.org

Please fill out the survey!

Toolkit:

http://www.abettercity.org/toolkit/waste_compost_waste.html