

2025

Day 1

9:30 AM
Oct 22

PLENARY 2

Considerations in Developing a Zero Waste Plan: Port Authority of NY & NJ Case Study

Moderator: Cory Oskardmay

Alex Cassidy

Speakers: Gillian Griffin
Ushma Pandya



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Considerations in Developing a Zero Waste Plan:

Port Authority of NY & NJ Case Study

Plenary 2 | October 22



Panelists



ALEX CASSIDY
Port Authority of
NY & NJ



GILLIAN GRIFFIN
NYS Pollution
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Think Zero LLC



Who We Are

- **The Port Authority of New York and New Jersey** is a bi-state transportation agency that builds, maintains and operates multiple mode of transportation in the New York- New Jersey Metropolitan Region
- **The New York State Pollution Prevention Institute** is a non-profit organization funded by the NYS Department of Environmental Conservation. Our mission is to help businesses and organizations of all kinds reduce their environmental footprint through pollution prevention.
- **Think Zero** is a waste reduction and diversion advisory firm. We work with companies to help them understand their waste footprint *and* support them in setting and achieving their low waste or zero waste goals.



Project Overview

Develop a Zero Waste report for the Port Authority of NY/NJ in support of their sustainability goals.



Our Approach

Gather Data



Existing Hauler Data



Benchmarking



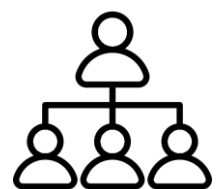
Site Visits



Waste Audits

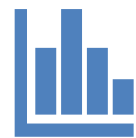


Examine
ZW Certifications



Document
organizational
structure

Evaluate Options



Synthesize Data



Assess Pathways to
Potential Diversion
Goals



Recommend Actions

Socialize



Gather input from
each department



Share with leadership
team and refine



Publish Final Zero-
Waste Roadmap

What is the Port Authority



Port Authority Trans Hudson

5 Airports



Newark Airport

2 Bus Terminals



Port Authority Bus Terminal

2 Tunnels



Lincoln Tunnel

What is the Port Authority

The Holland Tunnel



World Trade Center



4 Bridges



GWB Bus Station



George Washington Bridge

What is the Port Authority

Port Newark Container Terminal



6 Container Terminals



Maier Terminals (Elizabeth)

Red Hook Container Terminal



GCT Bayonne

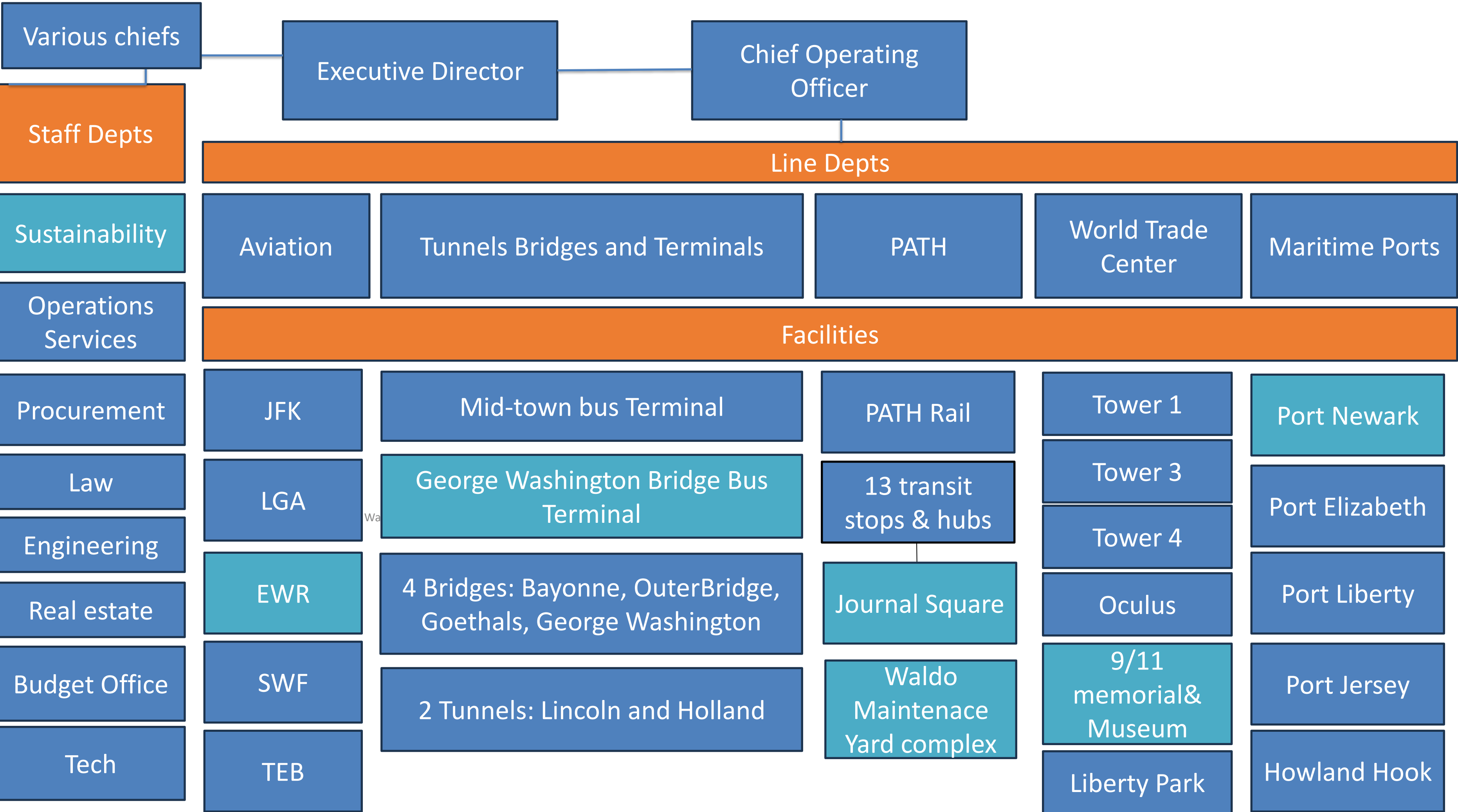


APM Terminals (Elizabeth)



GCT New York (Staten Island)





Various chiefs

Executive Director

Chief Operating Officer

Staff Depts

Line Depts

Sustainability

Aviation

Terminals Bridges and Terminals

PATH

World Trade Center

Maritime Ports

Operations Services

Facilities

Procurement

JFK

Mid-town bus Terminal

PATH Rail

Tower 1

Port Newark

Law

LGA

George Washington Bridge Bus Terminal

13 transit stops & hubs

Tower 3

Port Elizabeth

Engineering

EWR

4 Bridges: Bayonne, OuterBridge, Goethals, George Washington

Journal Square

Tower 4

Port Liberty

Real estate

SWF

2 Tunnels: Lincoln and Holland

Waldo Maintenance Yard complex

Oculus

Port Jersey

Budget Office

TEB

9/11 memorial & Museum

Liberty Park

Howland Hook

Tech

The Role of Governance in Zero Waste



Stakeholder Organization	Role	Waste Management Responsibilities	Reporting Lines	PA Control vs Influence
Port Authority (PA) <i>(WTC Department and Partner Line Departments)</i>	Land ownership, property ownership, operations and maintenance, safety and security, construction permitting and administration, etc.	<ul style="list-style-type: none"> • Operations • Maintenance & Cleaning Supervision • Waste hauling • Cleaning • Engineering • Purchasing 	COO PA Executive Director	Control
RTS / Filco	Third-party contractor	<ul style="list-style-type: none"> • Waste hauler for trash, cardboard, C&D, scrap metal, and leaves 	ABM	Control
WH Christian	Third-party contractor	<ul style="list-style-type: none"> • Rag vendor- collects, cleans, and returns rags for reuse 	ABM	Control
Tenants	Lessees	<ul style="list-style-type: none"> • Segregate waste • Bring waste to disposal containers/compactors 	PA	Influence
Westfield	Lease holder	<ul style="list-style-type: none"> • Retail tenant waste management • Retail tenant subleasing and support services 	PA	Influence

Site Selection Process

Rated all PANYNJ buildings on the following metrics

- Operational Control
- Funding Control
- Waste Complexity
- Waste Quantity
- Public visibility
- Current understanding of facility waste systems
- Stakeholder cooperation
- Facility Size

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Outcomes

- Identified high priority buildings
- Selected 11 representative facilities
- Engaged line department stakeholders

Final Sample

- **Aviation**

- Newark Terminal B
- United Cargo Facility

- **PATH**

- C-Yard Maintenance Facility
- Journal Square Station

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- **Port**

- Brooklyn
- Newark

- **Tunnels Bridges Terminals (TB&T)**

- George Washington Bridge Bus Station (GWBBBS)
- New Jersey Admin Bldg at Fort Lee
- Port Authority Bus Terminal (PABT)

- **World Trade Center (WTC)**

- Oculus
- 9/11 Memorial & Musuem

Review Existing Data Across the Portfolio

Learnings

- Multiple haulers, all managed differently
- Data gap across sites - 50% unavailable
 - 6 of 12 sites had data
 - 4 of 8 haulers had data
- Data collected primarily for invoicing purposes
- Contracts may or may not have data quality, detail and submissions expectations
- Data being provided in multiple formats (from an excel sheet to pictures of tipping invoices)
- Hauler data is just one input into the data collection process – there may be specialty data, donation data, reuse data, etc.

Line Dept	Site	Waste Hauler	Data?	Diversion Rate (%)	
				Excluding C&D	Including C&D
Aviation	Newark Terminal B	Gaeta	Y	60%	n/a
	United Cargo	Waste Management	N		
PATH	C-Yard	Century	Y	67%	67%
	Journal Square	Century	Y	76%	94%
Port	Brooklyn	Metropolitan	N		
	Newark	Giordano	Y	9%	47%
TBT	GWBBS	Filco	N		
	GWBBS Admin	Cardella	Y	60.4%	n/a
	PABT	Century	Y	47.5%	n/a
WTC	9/11 Memorial	RTS	N		
	9/11 Museum	RTS	N		
	Oculus	Action Carting → Century	N		

Benchmarking

By the Numbers

- **78** agencies across Port Authority departments
- **1,280** best practices reported by sample organizations
- **84** unique best practices
- **12** categories
 - Goals & Recognition (**337**)
 - Recycling (**203**)
 - Data, Reporting, and Metrics (**169**)



Benchmarking: Top 3 Categories

Goals and Recognition



ECONOMIC VITALITY

GOAL 13

FINANCIAL VALUE OF SUSTAINABILITY

GROW POSITIVE FINANCIAL IMPACTS OF SUSTAINABILITY INITIATIVES

Revenue (FY18-19): \$3,860,176

FY2018	Waste Oil Resale	\$35,112
FY2018	Print Shop Recycling Revenue	\$2,405
FY2018	Asset Recovery	\$93,791
FY2018	Metal Recycling Revenue	\$1,733,869
FY2018	WESS: grid regulation	\$37,354
FY2019	ACT 129 Rebate	\$18,105
FY2019	Waste Oil Resale	\$36,852
FY2019	Print Shop Recycling Revenue	\$2,750
FY2019	Asset Recovery	\$1,068,736
FY2019	Metal Recycling Revenue	\$886,661
FY2019	WESS: grid regulation	\$76,135

Savings (FY18-19): \$50,658

FY2018	ESCO #1*	\$288,662
FY2018	Savings from recycling	\$50,658
FY2019	Stormwater Fee Savings	\$46,768
FY2019	Hybrid-Electric Bus Fuel Savings: 2018 vs. 2019	\$65,251

2-Year TOTAL: \$3,910,834

Recycling



PORT OF ANTWERP-BRUGES
NEXTGEN DISTRICT

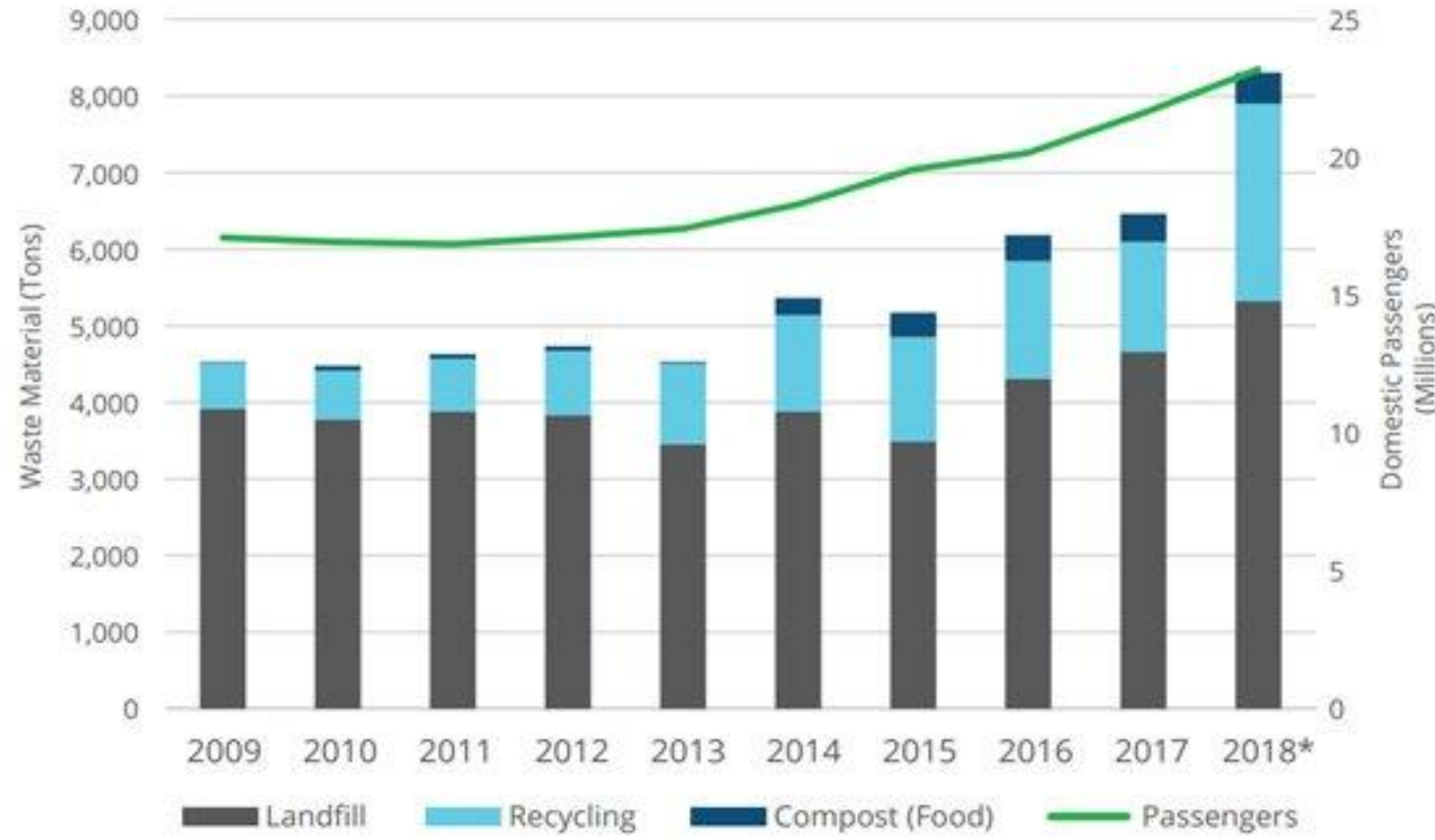
FUTURE HOME OF
PURECYCLE™



Data, Reporting, and Metrics



Figure 1: Historical Passenger Enplanement & Waste Generation Rates at San Diego International Airport⁵



Best Practices: Innovations

- **Environmental certification program for maritime industry**
 - 14 performance indicators that address environmental issues, including **waste management**, on a scale of 1 to 5
 - *“Increase waste diversion and reduce at source the waste arising from administrative activities and site operations”*
 - Includes ship owners, ports/seaways, and terminals and shipyards

- **“Don’t Feed the Landfills” Initiative**
 - Part of Zero-waste to landfill initiative
 - Focuses on source separation
 - Has diverted 16M lbs of waste from landfills since launch
 - Increased composting & recycling decreased waste sent to landfill by 50%



Best Practices: Innovations

TB&T – LA Metro

■ Upcycling Program

- Repurposes high-quality vinyl signage into tote disco bags in their Banners-to- Bags Program.
- Upcycles discontinued transit tokens into badge holders, lapel pins, zipper pulls on appreciation pouches, cufflinks, and other items.
- Hosted an Upcycling Web Forum (2020) with local manufacturing and design innovators to identify additional materials for repurposing or upcycling.



Benchmarking Findings

**78 Peer
Agencies**

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- 46% include waste in sustainability reporting
- 26% have a strategic waste management plan
- 15% have a dedicated webpage for waste programming
- 52% publish annual waste diversion rates
- 68% have a goal/target re: waste diversion or reduction

*The average goal is to achieve **73% diversion by 2027.***

*The average achieved diversion rate performance against goal is **49% by 2018.***

Site Visits & Interviews

- **Advantages**

- Sample selection process
- Stakeholder buy-in
- Understanding of buildings

- **Innovations and champions**

- Refurbish and repair parts for reuse at a railyard to minimize waste and cost (PATH)
- Reuse plastic sheeting and nylon straps for cargo (Aviation)



- **Challenges**

- Additional haulers for special waste streams
- Tailoring messaging and strategies to different stakeholder groups
- Public and retail tenant behavior change

- **Constraints**

- Bulk items that can't be audited (PATH)
- International waste (Aviation)
- Access to compactors (TBT)



Waste Audits

Why do we conduct them?

- Provide baseline data on what could be diverted
- Representative sample

What do we learn?

- Provides context to hauler data
- Provides granularity on potential diversion rates
- Learn what actually gets thrown away

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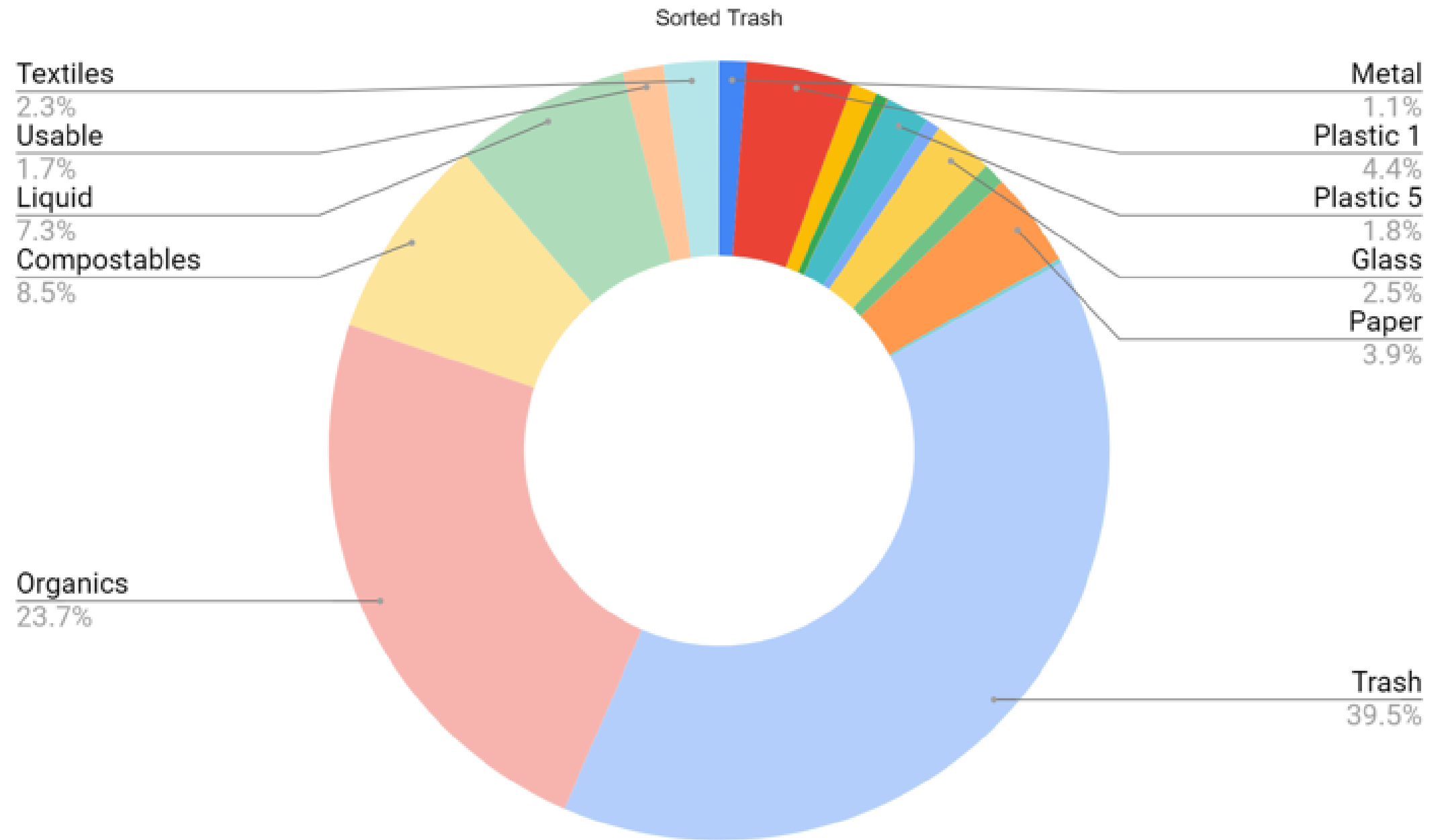
Our Process



Set Up



- **40%** of the trash was made up of items to be sent to **landfill**
- **17%** of the trash was made up of **recyclable** material
- Huge opportunity to divert **organic** materials which made up **33%** of the trash
- **Liquids** is **7%** is another opportunity (same weight as recyclables)



Example: Insights from the Waste Audit

Pictures from Waste Audits – Compost & Food Donation Opportunities

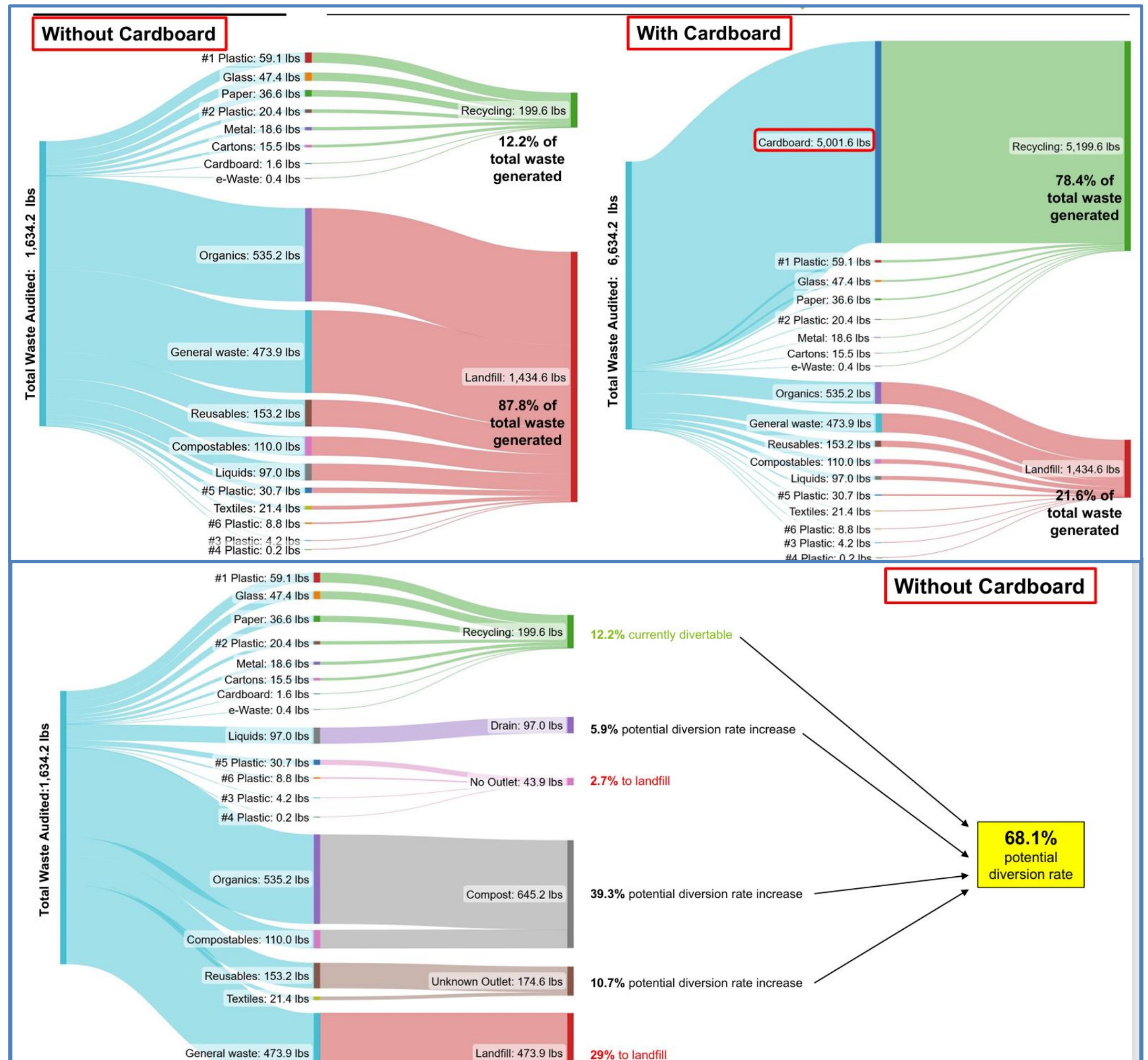


There is a large opportunity to start a compost program and a food donation program. Fresh baked pastries, bags of donuts from XXX, bagels and pretzels from XXX, and bags of juiced oranges from the XXX. We recommend starting a compost program for the food retail tenants as well as a food donation program for the food retail tenants.

Example: Taking the Waste Audit Data to Start Understanding the Range of Possibilities

Segmenting the data

- Current solution set
- Future solution set



"Zero Waste" Certifications

- Achieving the Zero Waste Goal and achieving a certification are two different things
- TRUE and UL are the most common certifications with ZWIA's definition as the standard

Certification	Minimum Diversion Rate for Verification	Minimum Diversion Rate for Certification
TRUE	Not offered	90%
UL Environment	80%	90%
Carbon Trust	Not offered	100%
Green Circle Certified	No minimum	100%
NSF	No offered	99%
SCS Global Services	50%	99%
Zero Waste International Alliance / Zero Waste USA	50%	90%



Definitions Critical to the Plan

Scope of Waste?

Operational Waste

Includes day to day operational waste that includes trash, recycling, organics, bulk, oil, etc.

C&D Waste

Includes construction and demolition project-based waste (e.g. asphalt, concrete, glass, wood, insulation, masonry, metal)

Universal Waste

Includes non-regulated hazardous waste, follows EPA definitions 2025 National Zero Waste Conference

E Waste Waste

Hazardous Waste *(not in scope)*

Includes items such as Asbestos, chemicals (list to be added to by sites)

Boundaries?

PA Owned & Controlled

Easier to manage, can use multiple levers

PA Owned, Not Controlled

Pathways?

Reuse & Donations

Recycling

Composting / AD

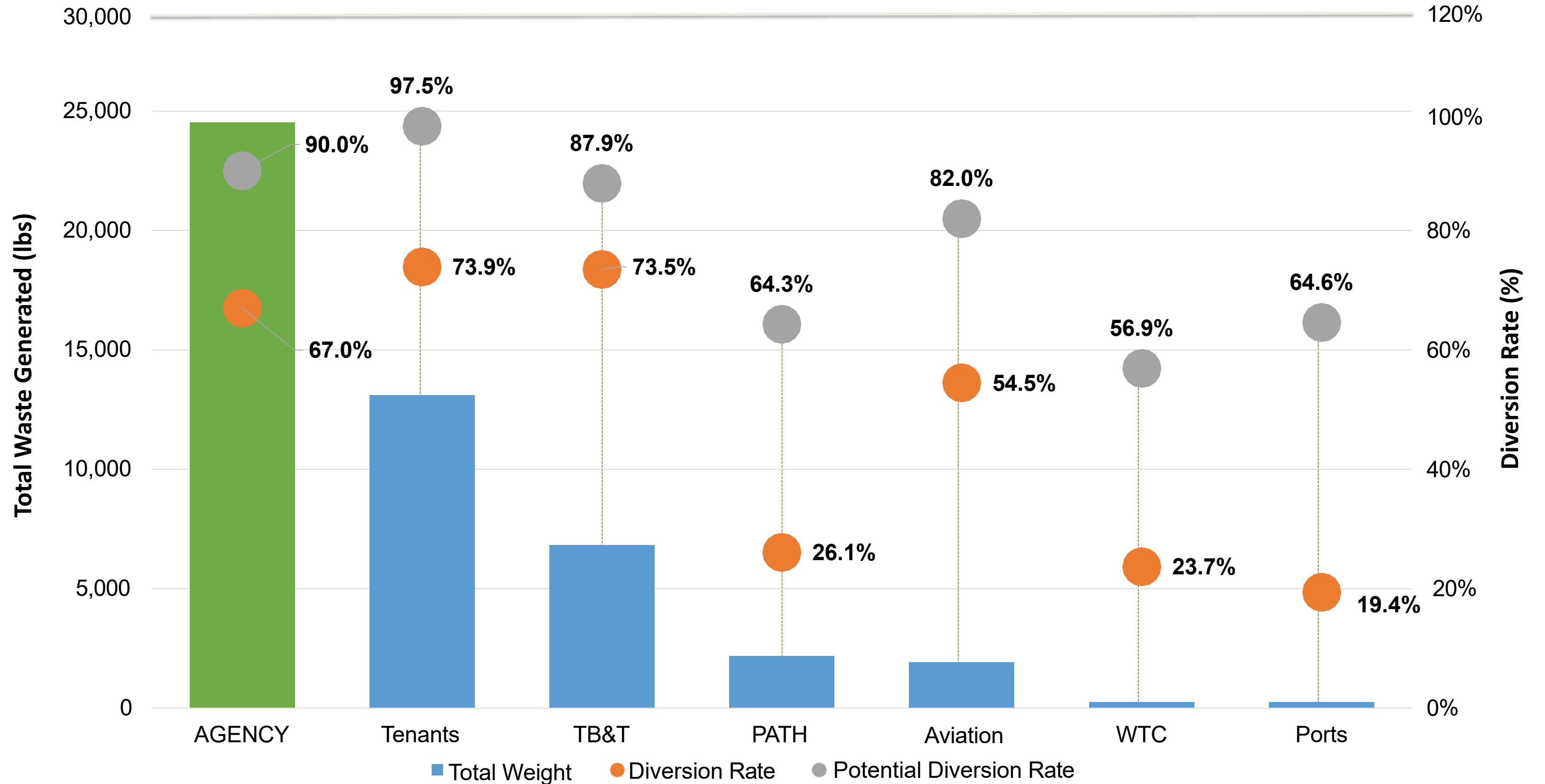
WTE ???

Landfill

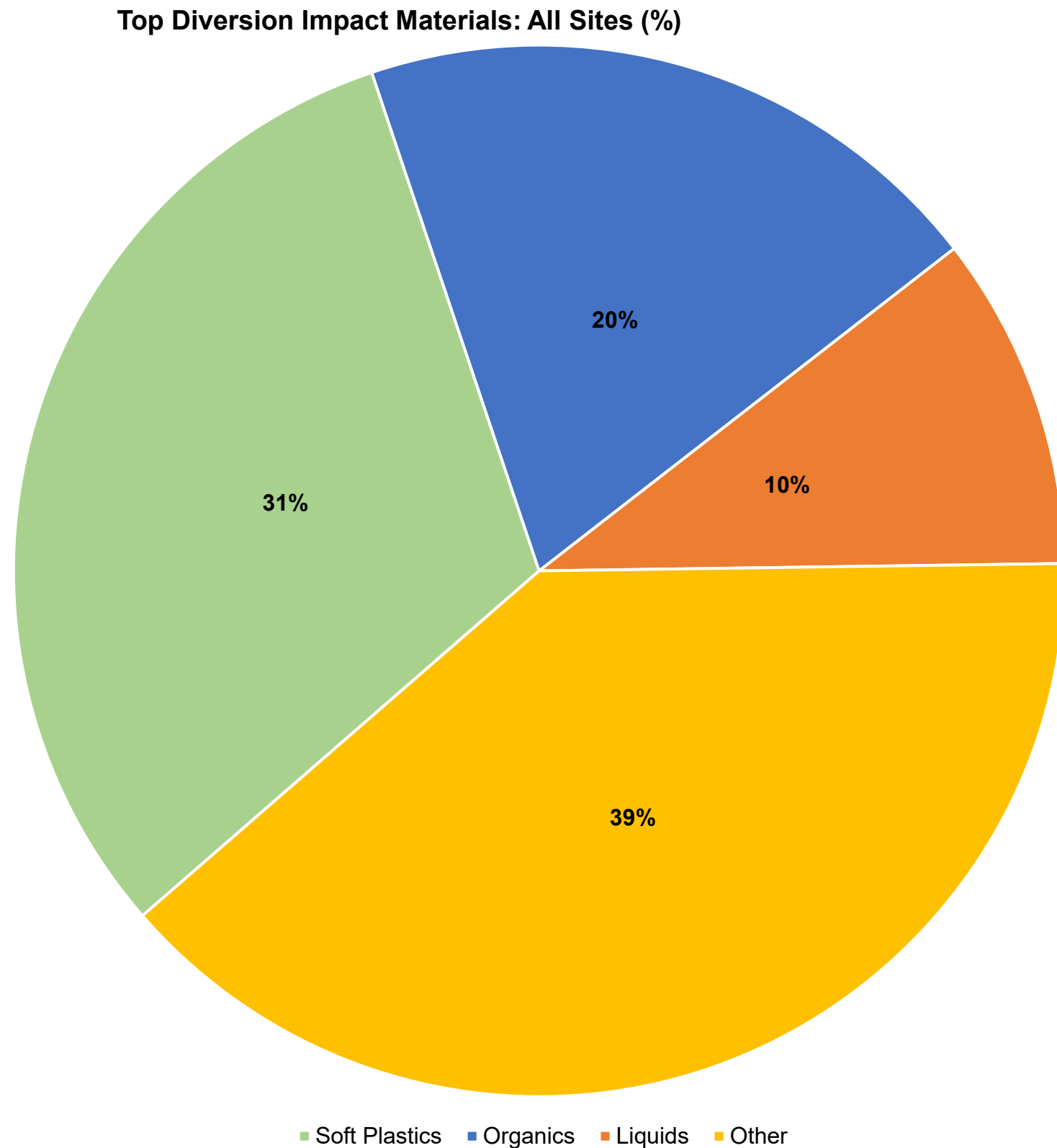
Incineration

Diversions Rates by Line Dept (Waste Audit Data)

Total Waste Generated and Diversion Rate by Line Department



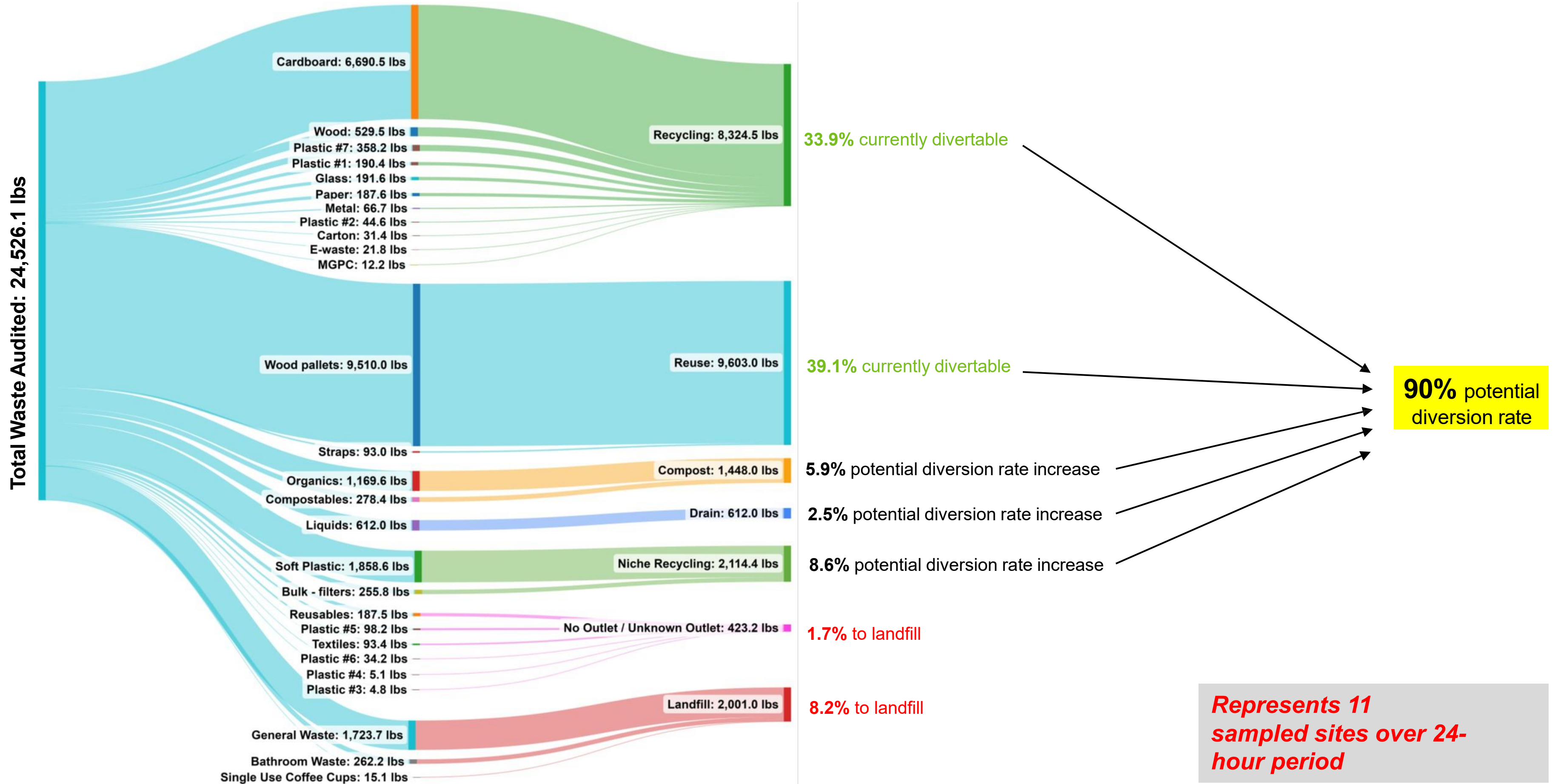
Top Diversion Impact Opportunities by Material



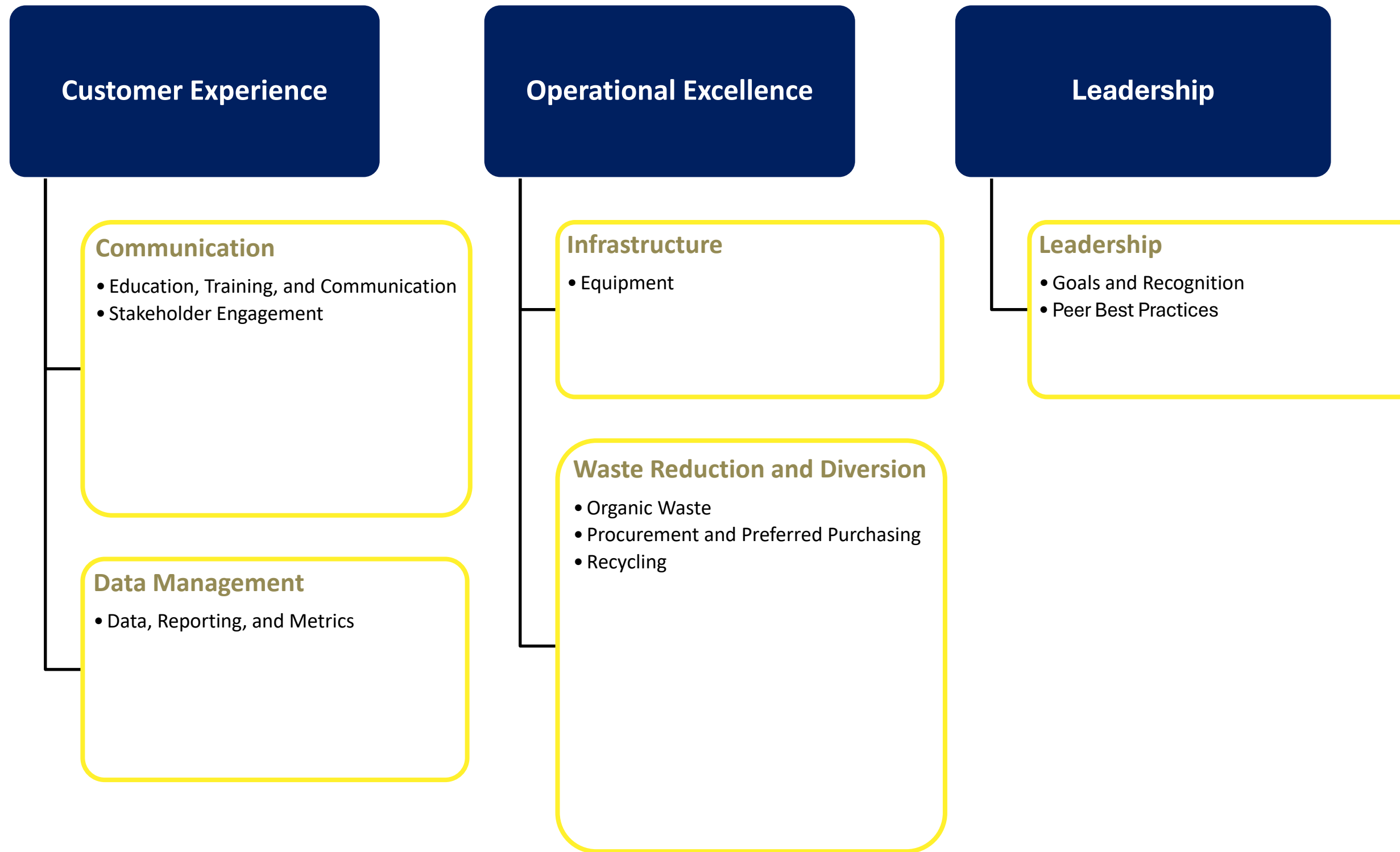
Things to Consider

- **Volume of waste**
- **Feasibility of diversion**
 - Reuse options
 - Outlet availability
 - Collection and segregation
 - Minimum volume requirements
 - Storage space
- **Role of stakeholders**
 - Control vs. Influence
 - Behavior change

Theoretical Diversion Rate: Increased Level of Service



Value-Oriented Action



Agency-Wide Roadmap: Proposed Actions

Theme	Strategy	Category	Action	Priority
Operational Excellence	Waste Reduction & Diversion	Procurement and Preferred Purchasing	Establish guidelines and minimum requirements for waste hauler contracts to be used across the agency.	High
Customer Experience	Communication	Stakeholder Engagement	Establish an agency-wide working group specifically for zero waste to landfill efforts. Involve key stakeholders and partners on a regular basis.	High
Operational Excellence	Waste Reduction & Diversion	Organic Waste	Establish a pilot program for organics diversion.	High
Operational Excellence	Waste Reduction & Diversion	Recycling	Prioritize diversion solutions for bulk material streams such as wood, HVAC filters, vinyl, metal, and soft plastics.	High
Customer Experience	Communication	Education, Training, and Communication	Establish an agency-wide communication program specifically for zero waste to landfill efforts. This system should be used to inform and educate employees, contractors, tenants, vendors, and the public on waste reduction, sustainability initiatives, and segregation efforts in order to bolster participation.	Medium
Operational Excellence	Waste Reduction & Diversion	Reduce	Prioritize waste reduction and sustainable procurement as the first and most important step toward managing and reducing internally-generated waste across all facilities.	Medium
Operational Excellence	Waste Reduction & Diversion	Organic Waste	Establish a pilot program for liquid diversion.	Medium
Operational Excellence	Infrastructure	Equipment	Establish and implement standards for waste bins (e.g., color, size, shape, colocation) across the agency.	Medium
Customer Experience	Communication	Stakeholder Engagement	Partner with tenants on organic waste composting and food donation.	Medium
Who Are the Leaders?	Leadership	Goals and Recognition	Identify a Green Champion at each facility and line department.	Low
Operational Excellence	Waste Reduction & Diversion	Organic Waste	Establish a pilot program for diversion of compostables.	Low

Major Improvement Areas

- **Goal Setting** → interim and long term; recognize one size does not fit all (and communicate)
- **Data Infrastructure** → system to capture and track *ALL* of the waste data in order to measure progress
- **Strengthen Waste Hauler Partnerships** → establish expectations upfront and often, reinforce with contractual language and on going touchpoints
- **Waste Segregation Infrastructure** → make it easy and convenient for individuals to sort waste (start with the bins, signage, liners, training and education)
- **Expand Diversion Programs (e.g., donations, organics, repair & reuse)**

Socializing the Plan

- PANYNJ met regularly to draw conclusions on highest impact items while also considering implementation challenges

Line Departments	Facilities	Staff Departments	Leadership
<ul style="list-style-type: none">• Cost• Level of effort and oversight• Supporting systems (e.g. databases, contract limitations, governance processes)	<ul style="list-style-type: none">• Feasibility• Resources needed (money, staff)• Barriers• Operational context	<ul style="list-style-type: none">• Legal landscape and policy context• Procurement and contract considerations• Stakeholder relationships• Budget planning	<ul style="list-style-type: none">• Effectiveness• Predicted success/performance measurement• Timeline• Demonstration of leadership and innovation

- Made decisions on what actions to commit to, by when and how actions would be implemented
- Reserved data from report as an internal benchmark, lessons learned, and detailed reference and findings study

Next Steps & Final Plan

- PANYNJ to publish a **public Zero-Waste Roadmap**
 - Roadmap will include:
 - Agencies waste diversion goals
 - Implementation timeline
 - Action commitments
 - Whether actions apply to PANYNJ or tenants
 - Case studies of current waste management accomplishments
 - Expected by end of year 2025
- Implement actions & tracking of progress
- **Annual waste reporting** in PANYNJ GHG Inventory
- Achievement of Goals

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Lessons Learned

- **Get the basics done first:** it can go a long way towards progress
- **90% Waste Diversion is a difficult goal** set by many but achieved by few.
 - Goal setting philosophies differ:
 - Set realistic, project-oriented goals;
 - Set aspirational goal
- **Managing consumer waste is different** than managing large scale commercial waste
 - Public and mixed-use spaces, vs controlled closed loop maintenance systems.
- Successful achievement of goals is **dependent on multiple groups**
 - Use various tools: Policy setting, training, diplomacy with tenants, incentives and recognition, goal setting, metric collection, working groups, case studies, progress monitoring, pilots, marketing
- **Incremental changes & long-term planning** can help manage the zero-waste transition

Thank You!



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