WASTE DEEP 1

OVERVIEW Examining the Issues

HOW DO YOU SPARK STUDENT INTEREST IN WASTE?

By using our Issue Cards! **Issue Cards are over 65 printable quotes, statistics, graphs, maps, definitions, excerpts, cartoons and photographs**. In groups, students will examine this content to gain a multidisciplinary understanding of waste and its relationship to current economic, social and environmental issues in New York City and the world. The Cards—also available as PowerPoint slides—are organized into five sets: Consumerism, Justice & Equity, Non-Renewable Resources, "Away," and a History of Waste in NYC. The size of your class, the dynamics and learning styles of your students and the amount of time you would like to spend with the Cards can guide the way your students use them. Here is one successful method:

Students Break into 5+ Groups

Each group receives a unique set of Issue Cards. Students spend time examining the content of their group's cards and begin to form reactions.

Students Complete Individual Response Slips

After examining their set of Issue Cards, students complete Response Slips to express what they think, feel or wonder about the information of one or more Cards.

Groups Construct a Poster and Present to the Class

In their groups, students share their reactions to the content, identify common themes and work together to create a poster to be shared with and presented to the rest of the class.

WASTE DEEP 2

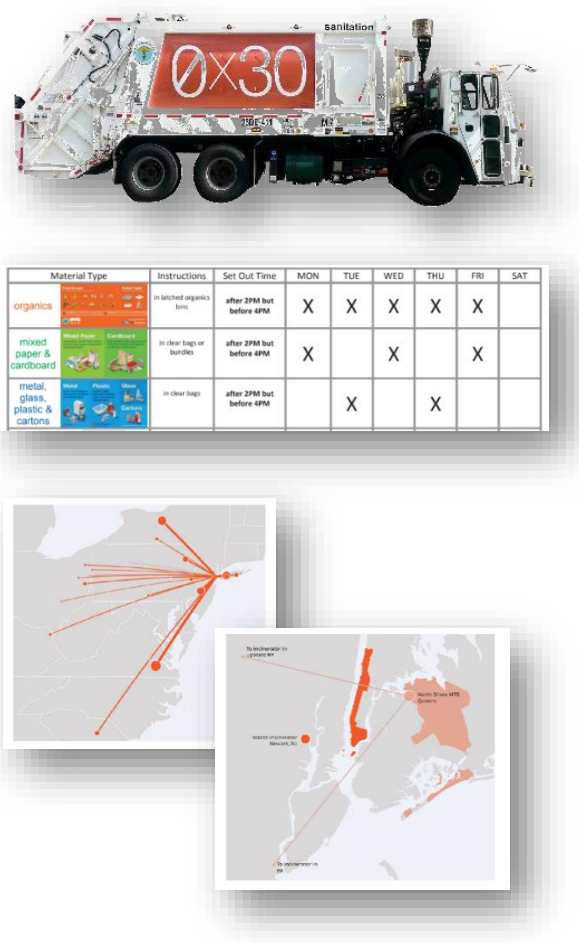
OVERVIEW Understanding New York City

WHAT IS NYC DOING ABOUT ITS WASTE?

New York City's waste systems are vast, complex and fascinating. Many New Yorkers do not know where their waste goes and doubt the efficacy of NYC recycling. **Our PowerPoint presentation grounds students in the reality of NYC waste management today and empowers them to recycle right.** Upon viewing statistics, charts, maps, images, and visual games, students will understand the composition of their waste, where it all goes, how it gets there, and the challenges and goals of NYC's 0x30 sustainability plan. Students will also learn how to properly sort their waste in school and at home. With this overview and understanding, students will be equipped to identify specific problems in their school community and take creative action toward solving them. The presentation slides are organized into three general categories:

Data

Systems



Sorting

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LESSON PLAN Understanding New York City

In *Waste Deep* 2, students view city-based data, statistics, charts, maps, images, and visual games to understand the composition of their waste, where it all goes, how it gets there, and the challenges and goals of NYC's 0x30 sustainability plan. Students will also learn how to properly sort their waste in school and at home and start to imagine school-based solutions to waste.

OBJECTIVE

Students will:

- learn about OneNYC – New York City's ambitious plan to become the most resilient, equitable, and sustainable city in the world
- learn about the goal of sending Zero Waste to landfills by 2030 and the systems NYC has put in place to tackle the "0 X 30" vision
- gain an understanding NYC's waste-related statistics and how these problems impact our city
- learn how they can be a part of the solution, including recycling basics
- brainstorm school-specific solutions to waste

INQUIRY/CRITICAL THINKING QUESTIONS

- What can we do to reduce the negative impacts of waste on our health, environment, and economy?
- What are the conditions needed to affect behavior change?

MATERIALS NEEDED

Teacher Materials

- Completed Waste Journals
- Posters on Display (from previous lessons)
- NYC Data, Systems, and Recycling Slide Deck
- Sample recyclables, waste items and recycling bins

TIME REQUIRED

- One 45-minute period

PROCEDURE

Waste Deep 2 explores data, systems, and solutions to waste issues in NYC. Through a short opening discussion, presentation, and closing brainstorm discussion students will gain a thorough understanding of the City's waste landscape and start brainstorming ways to narrow the gap between our recycling knowledge/infrastructure and our recycling behavior, particularly in schools.

I. **Waste Journal Homework Discussion (5 minutes)** discuss student findings from their Waste Journal
II. **Phase 1 Issue Poster Recap: (5 minutes)** students review issues from Phase 1 and share their own associations with waste
III. **NYC Data, Systems, and Recycling 101 (25 minutes)** using slide deck with talking points, present slide show to students
IV. **Idea Brainstorm (10 minutes)**
Facilitate a discussion around recycling behaviors in school.
    - Ask students to start thinking about why there is such a big gap between what we know (and the waste management infrastructure in place) and our behaviors.
    - What are ways we could help change behaviors in our school?

Continue the journey in *Waste Deep 3:* Investigating Your School!

0 x 30

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VISION 3: Sustainability

GOAL 2

New York City will send zero waste to landfills by 2030.

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Expand the NYC **organics program** to serve all New Yorkers by the end of 2018.

Make all schools Zero Waste Schools.

Reduce the use of **plastic bags** and other non-compostable waste.

Give every New Yorker the opportunity to recycle and reduce waste, including at **NYCHA housing.**

0×30

Enhance **curbside recycling** program.

Expand opportunities to reuse and recycle **textiles and electronic waste.**

Develop a **Save-As-You-Throw** program to reduce waste.

Reduce **commercial waste** disposal by 90% by 2030.

Getting to Zero

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NYC: Weight of Waste

New York City produces **6 million tons of garbage** per year.

Source:
https://www.washingtonpost.com/graphics/2017/world/global-waste/?hpid=hp_hp-visual-stories-desktop_no-name%3Ahomepage%2Fstory&utm_term=.ad598af0fdce#newyork

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115,000
TONS/WEEK!

16%

diversion rate*
in 2016

100%

diversion rate*
goal by 2030

*diversion rate (n.)

the percentage of waste diverted from traditional disposal (i.e., landfilling, incineration) to be recycled, composted, or re-used

Trash Journey & Impact

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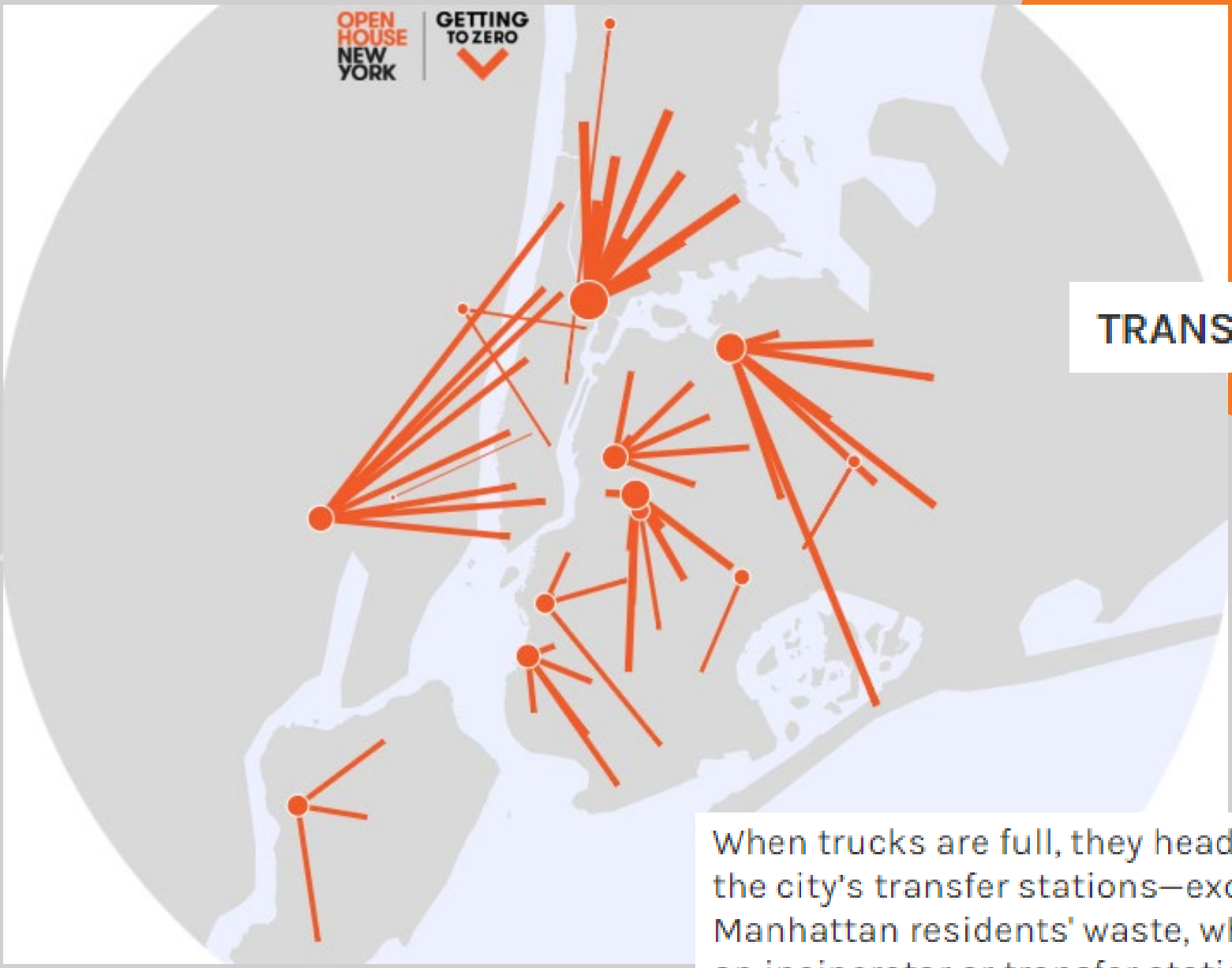
COLLECTION

Picking Up

Every day, more than 6,000 men and women of the Department of Sanitation collect garbage from residences and public buildings in New York City.

They work in pairs and collect more than 10,000 tons of material* every day. All that waste goes into the back of compactor trucks.



TRANSFER

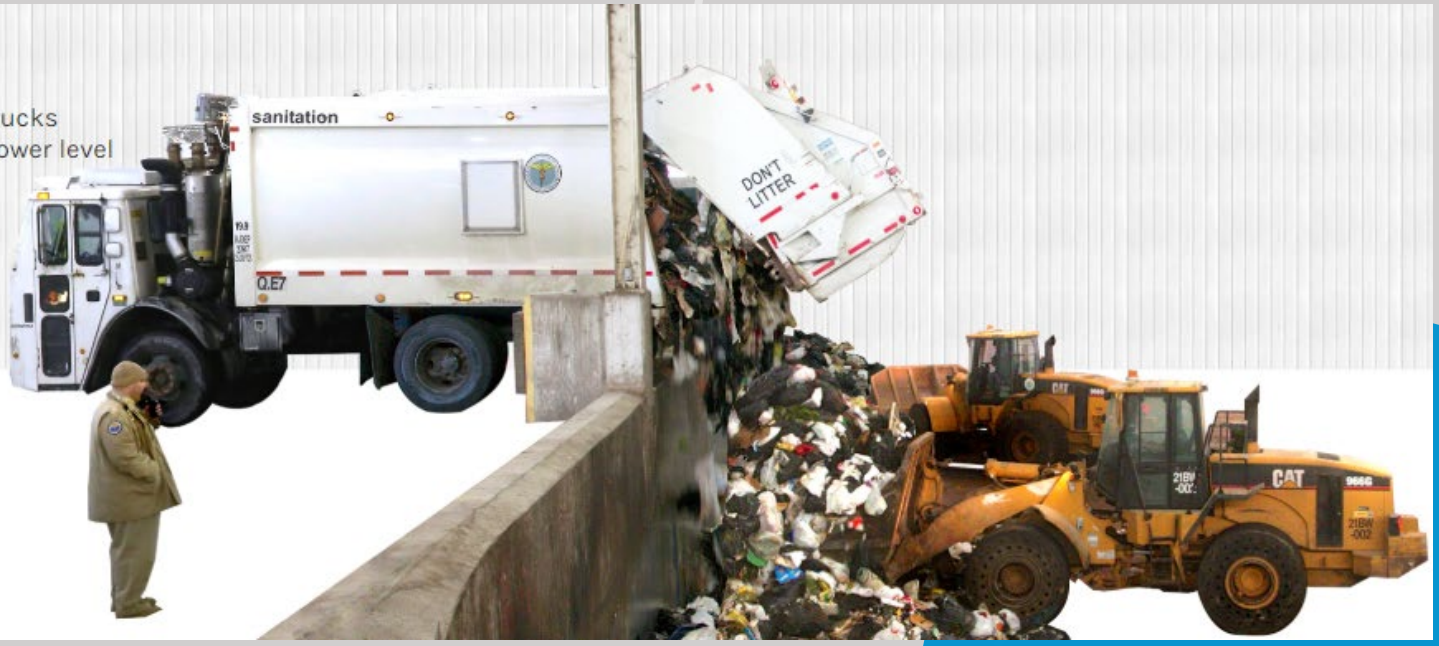
When trucks are full, they head to one of the city's transfer stations—except for Manhattan residents' waste, which goes to an incinerator or transfer stations in New Jersey*.

Arriving at a Transfer Station

Transfer stations are consolidation centers for waste. They combine material from several collection trucks into containers.

Tipping

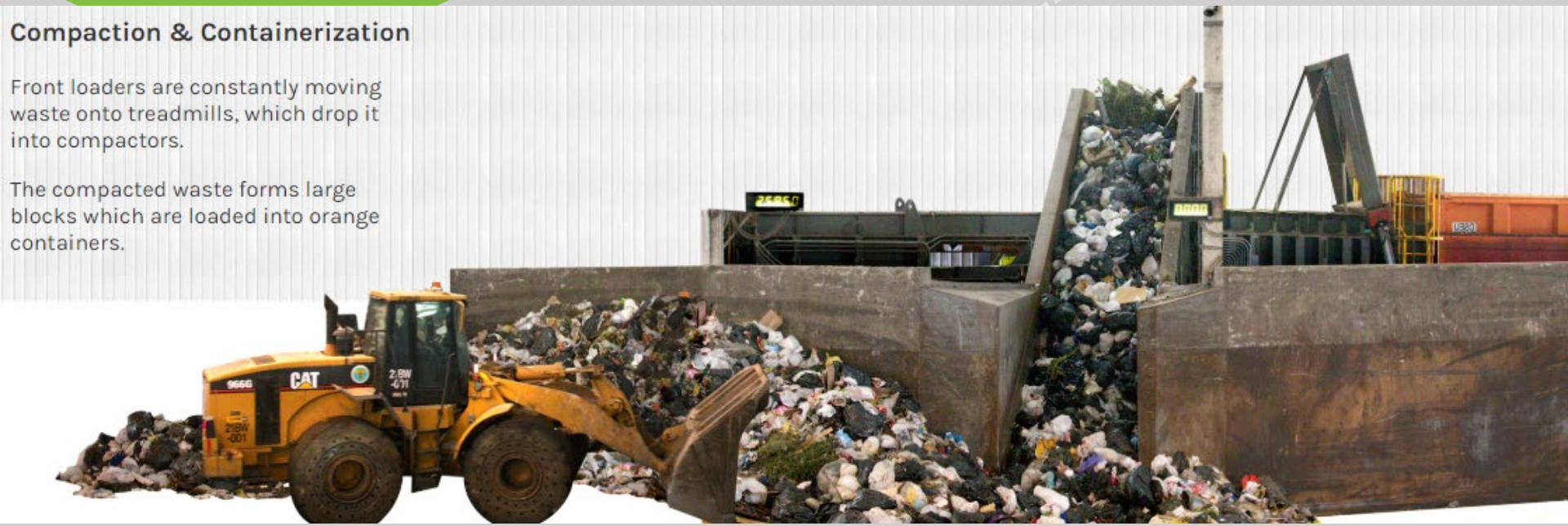
Inside the transfer station, trucks unload their content onto a lower level known as the "tipping floor".



Compaction & Containerization

Front loaders are constantly moving waste onto treadmills, which drop it into compactors.

The compacted waste forms large blocks which are loaded into orange containers.



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NEXT STOP: Landfills

2001

The closure of Fresh Kills

In 1996, the City pleged to close Fresh Kills landfill in five years, due to intense community pressure

Sending it "Away"

Waste is transported on trains or trailer trucks, mostly to landfills.

It travels to other cities and states, located from 70 up to 600 miles away*.

Exporting waste costs NYC close to $400 million/year

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Landfills are essentially human-made mountains of waste and can reach hundreds of feet in height.

Arriving at a Landfill

Waste arrives at its final destination after a long journey.

METHANE GAS RELEASED

LEACHATE

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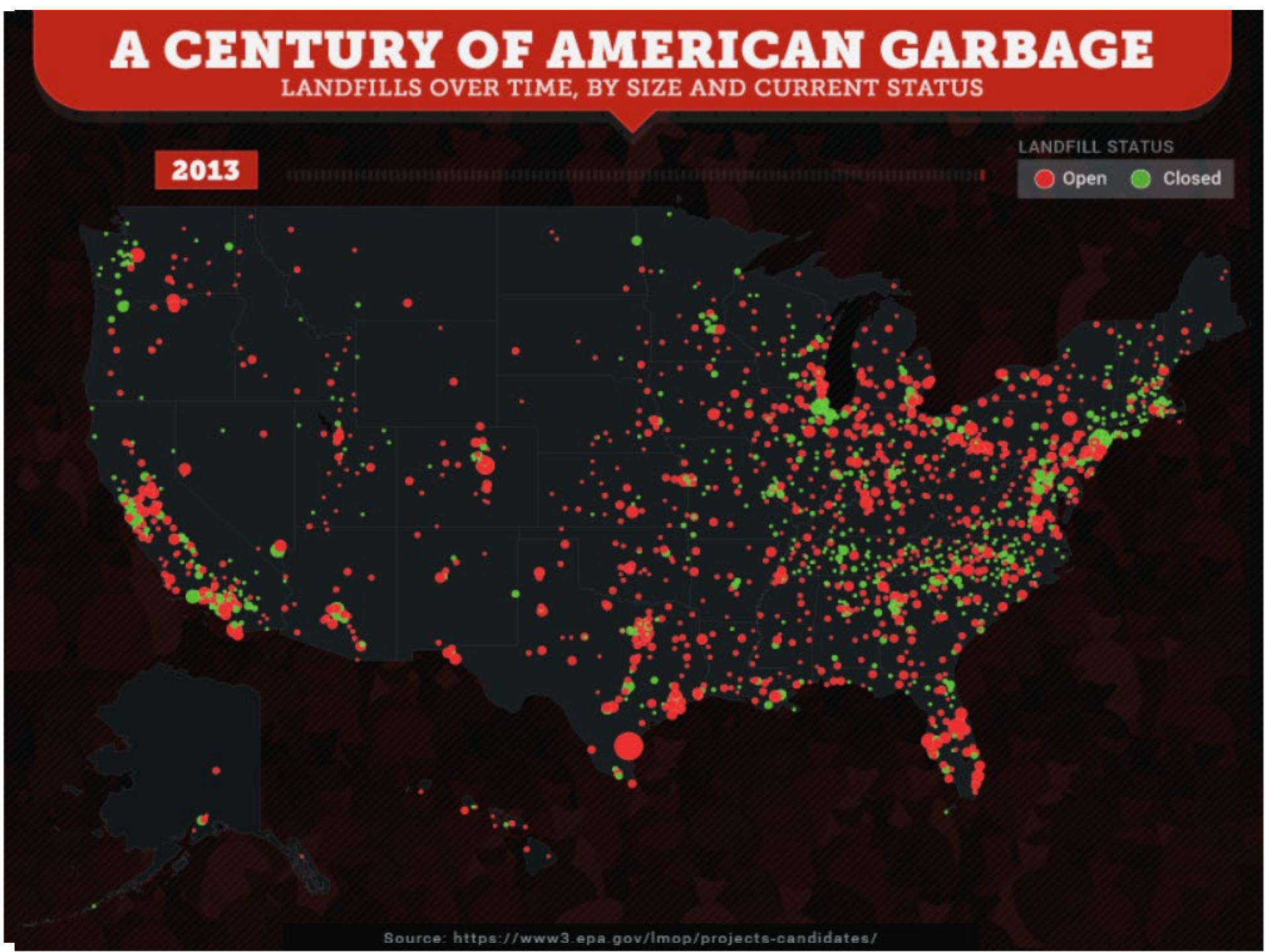
A CENTURY OF AMERICAN GARBAGE

LANDFILLS OVER TIME, BY SIZE AND CURRENT STATUS



Source: https://www3.epa.gov/lmop/projects-candidates/

350

500

1000

A million years??

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WASTE TRANSFER STATIONS

Over 70% of NYC's waste passes through 3 neighborhoods:

South Bronx
North Brooklyn
SE Queens

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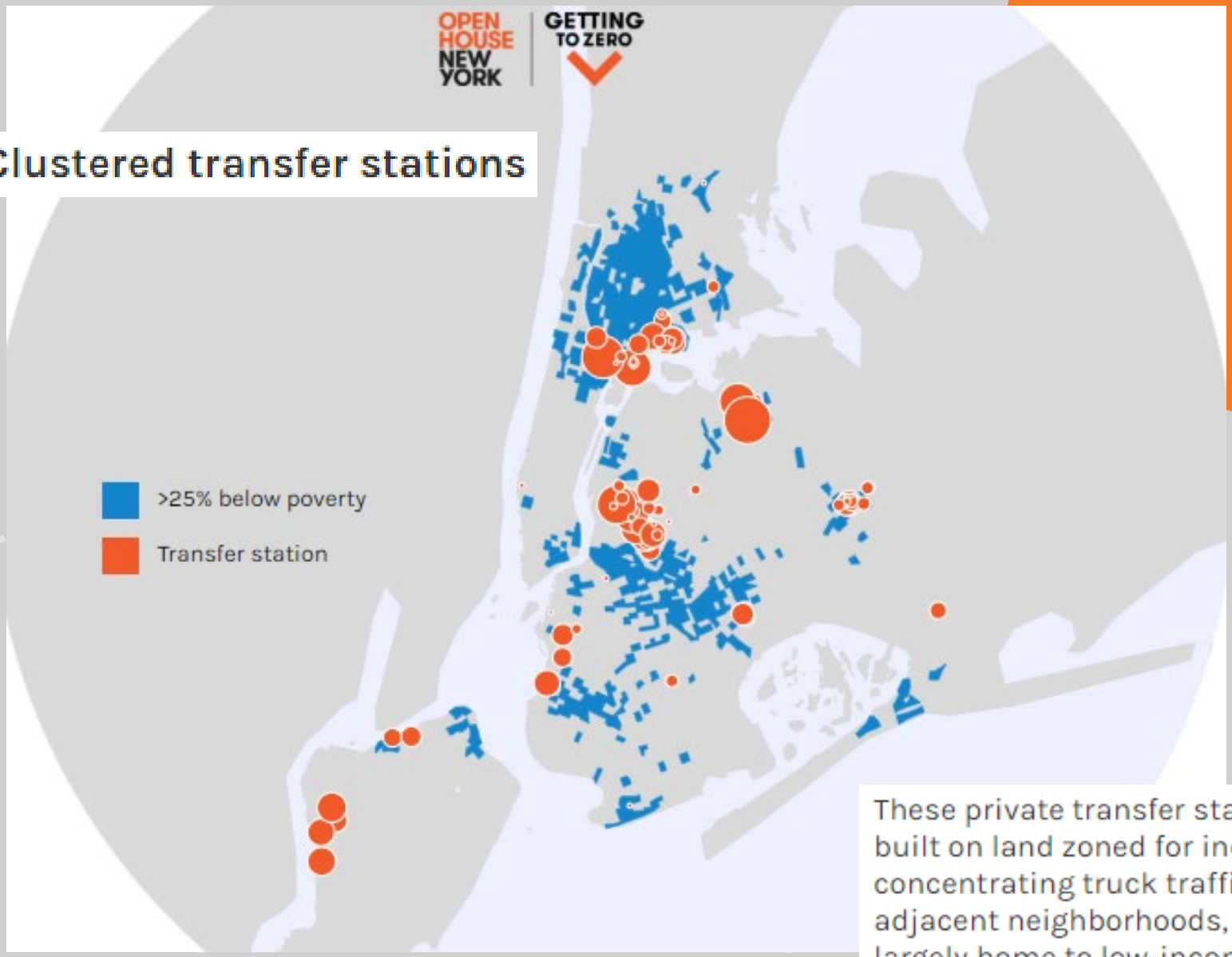
OPEN HOUSE NEW YORK | GETTING TO ZERO

Clustered transfer stations



These private transfer stations were built on land zoned for industrial use, concentrating truck traffic in the adjacent neighborhoods, which are largely home to low-income communities and communities of color.

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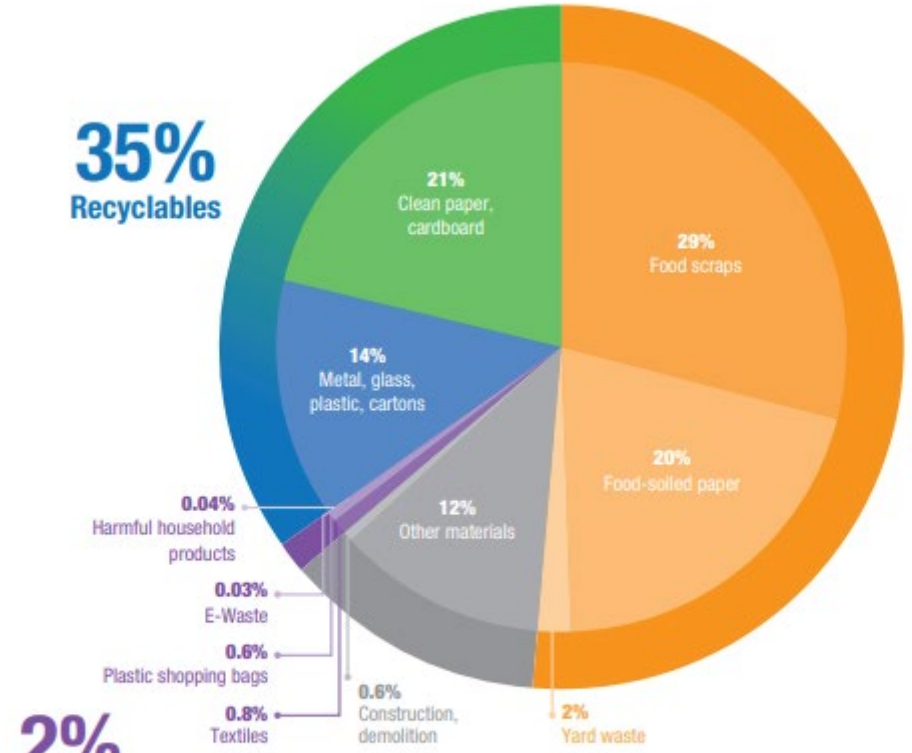
Schools have the potential to divert as much as 86% of their waste for recycling or composting through DSNY curbside collections.

2017 Composition of Schools Aggregate Discards



Note: Totals may not sum exactly due to rounding.

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So…why YOU?

Why schools?

86%

is recyclable or compostable

1,800 NYC schools

1.1 million students

x 800,000 meals daily

= HUGE IMPACT!

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Recycling 101

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Sort It Out!

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Green Bin Don’ts

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Blue Bin Don’ts

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What Goes in My Trash Bin?

- Soft Plastics
- Chip Bags
- Plastic Wrappers

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NO RECYCLABLES IN THE TRASH BIN

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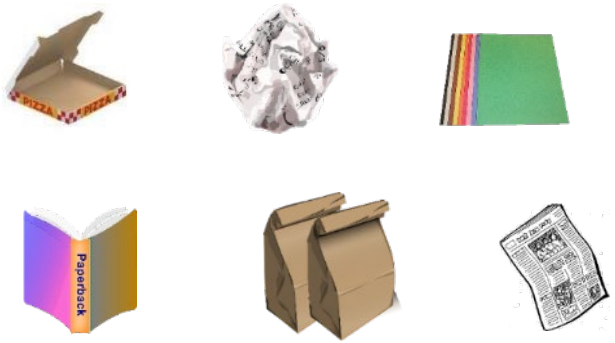
Recycling can create up to 7x more jobs than sending waste to landfills.

Benefits: Jobs

SIMS Municipal Recycling (BK)



Pratt Industries (S.I.)

Composting Facilities (near NYC)

Green Bin Journey

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What Goes in My Green Recycling Bin?

Mixed Paper

Cardboard

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Recycling (half of the) paper in New York City*

About half of the paper collected by DSNY is recycled in the city, at the Pratt Paper Mill on Staten Island.*

The paper is taken there from Manhattan by barge, or from Staten Island and South Brooklyn by collection trucks.

Pratt paper mill

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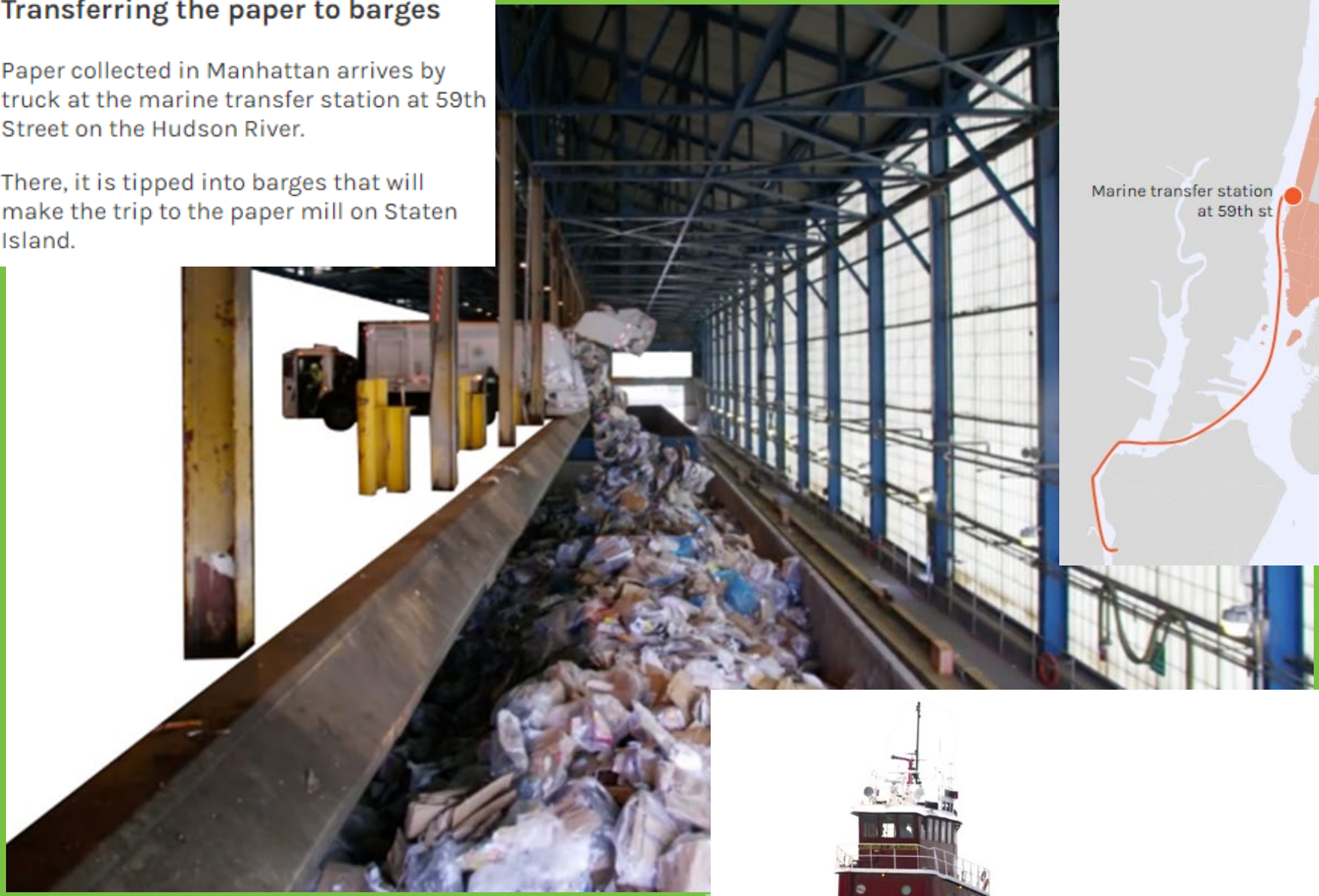
Transferring the paper to barges

Paper collected in Manhattan arrives by truck at the marine transfer station at 59th Street on the Hudson River.

There, it is tipped into barges that will make the trip to the paper mill on Staten Island.



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Corrugation and manufacturing

From waste to product

Processing the paper in Staten Island

The paper is unloaded from barges by a crane and then loaded into the paper mill's production line. Paper arriving on trucks will go through the same process.

Blue Bin Journey

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What Goes in My Blue Recycling Bin?

- Metal
- Rigid Plastics
- Glass
- Cartons

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Arriving at the Sims Material Recovery Facility in Brooklyn

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Metal, glass, and plastic

The other part of DSNY's recyclables, composed of mixed metal, glass, and plastic, are tipped on an opposite corner of the facility for further sorting.

Mechanized sorting

Metals are recovered with magnets and electrical currents; several mechanical processes separate glass, plastic film and paper. The remaining plastics go through optical sorters that separate them by chemical composition.

The result: sorted bales

The end product of this sorting system are different bales, each containing a specific type of material.

Here, bales of hard plastics are being transported to storage by a forklift.

Brown Bin Journey

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What Goes in My Brown Organics Bin?

- All Food Scraps
- Compostable Trays
- Napkins
- Food-soiled Paper

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OPEN HOUSE NEW YORK | GETTING TO ZERO

About one third of New York City's residential waste is comprised of organic material.

Alternatives to landfilling

- Composting facility
- Anaerobic digester

McEnroe Farm, NY

Newtown Creek Wastewater Treatment Plant, NYC

Staten Island Compost Facility, NYC

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Arriving at the Staten Island Composting Facility

Composting the organics

After being unloaded from collection trucks, organics are mixed with woodchips and arranged in long rows, called windrows.

Compost made from local organics

The resulting compost is donated by DSNY for local use in gardening, public greening, soil mitigation, and street tree stewardship.

From food scraps to food

The produced compost is often used in local community gardens and farms, helping turn food scraps into food again.

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School Recycling Systems

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Bins and Signage

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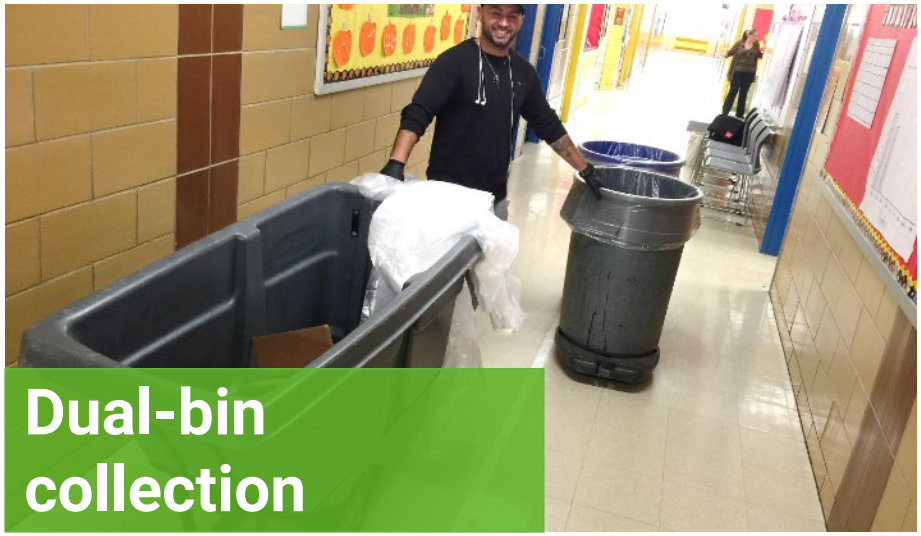
Collection, Storage, Set-out, Trainings



Dual-bin collection

Designated storage space

Curbside set-out

Custodial Staff Trainings

DOE Building Code: M470 Address: 145 W 84 ST, 10024

MATERIAL TYPE	INSTRUCTIONS	SET OUT TIME	COLLECTION TIMES BEGINNING @4PM MON	TUE	WED	THU	FRI	SAT
Organics: Food Scraps, Food-soiled Paper, Compostable Utensils	In latched organics bins	After 2pm but before 4pm	ORGANICS	ORGANICS	ORGANICS	ORGANICS	ORGANICS	
Mixed Paper, Cardboard	In clear bags or bundles	After 2pm but before 4pm	MIXED PAPER/ CARDBOARD RECYCLING		MIXED PAPER/ CARDBOARD RECYCLING		MIXED PAPER/ CARDBOARD RECYCLING	
Cartons, Hard Plastic, Glass, Metal	In clear bags	After 2pm but before 4pm		METAL/GLASS/ PLASTIC/ CARTONS RECYCLING		METAL/GLASS/ PLASTIC/ CARTONS RECYCLING		
Trash: Soft Plastics, Other Waste	In clear bags	Between 4pm and 12 Midnight the day before*	GARBAGE		GARBAGE			

*Confirm your school's trash collection schedule at: **nyc.gov/dsny**.
Enter your building address under **"Collection Schedule."**
Follow your set out schedule. Report any missed collections to your local DSNY Garage.

Please note: Material set out after your school has been serviced is not a missed collection.
If you have dumpster or compactor service, your schedule may be different.

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Research & Data

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2017

NYC Residential, School, and NYCHA Waste Characterization Study

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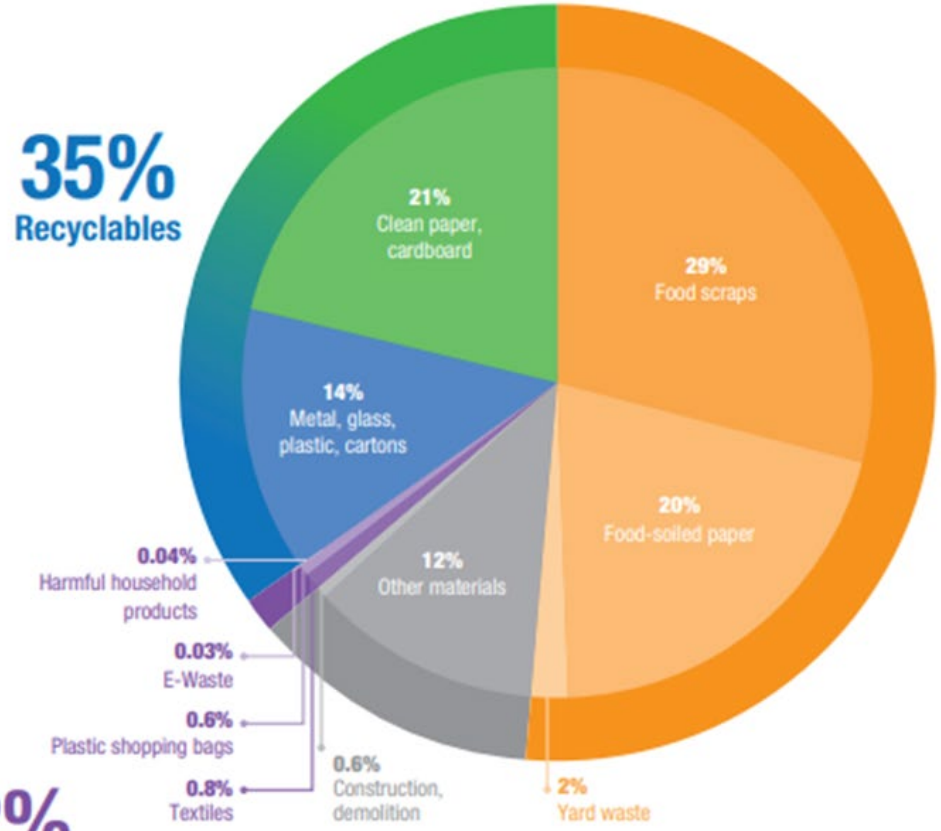
2017 Composition of Schools Aggregate Discards



Note: Totals may not sum exactly due to rounding.

Recycling Achievement

The charts below show the average recycling achievement of NYC schools in 2017. Some schools capture significantly more recyclables and have lower contamination of unwanted materials in recycling collections than others, but the 2017 Study documented that, on average, there is considerable potential to recycle more from school waste.

School Recycling Collections	Paper Recycling	MGP Recycling
Capture Rate	57.9%	19.4%
Contamination Rate	17.2%	40.6%

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Year Three Report

September 2018

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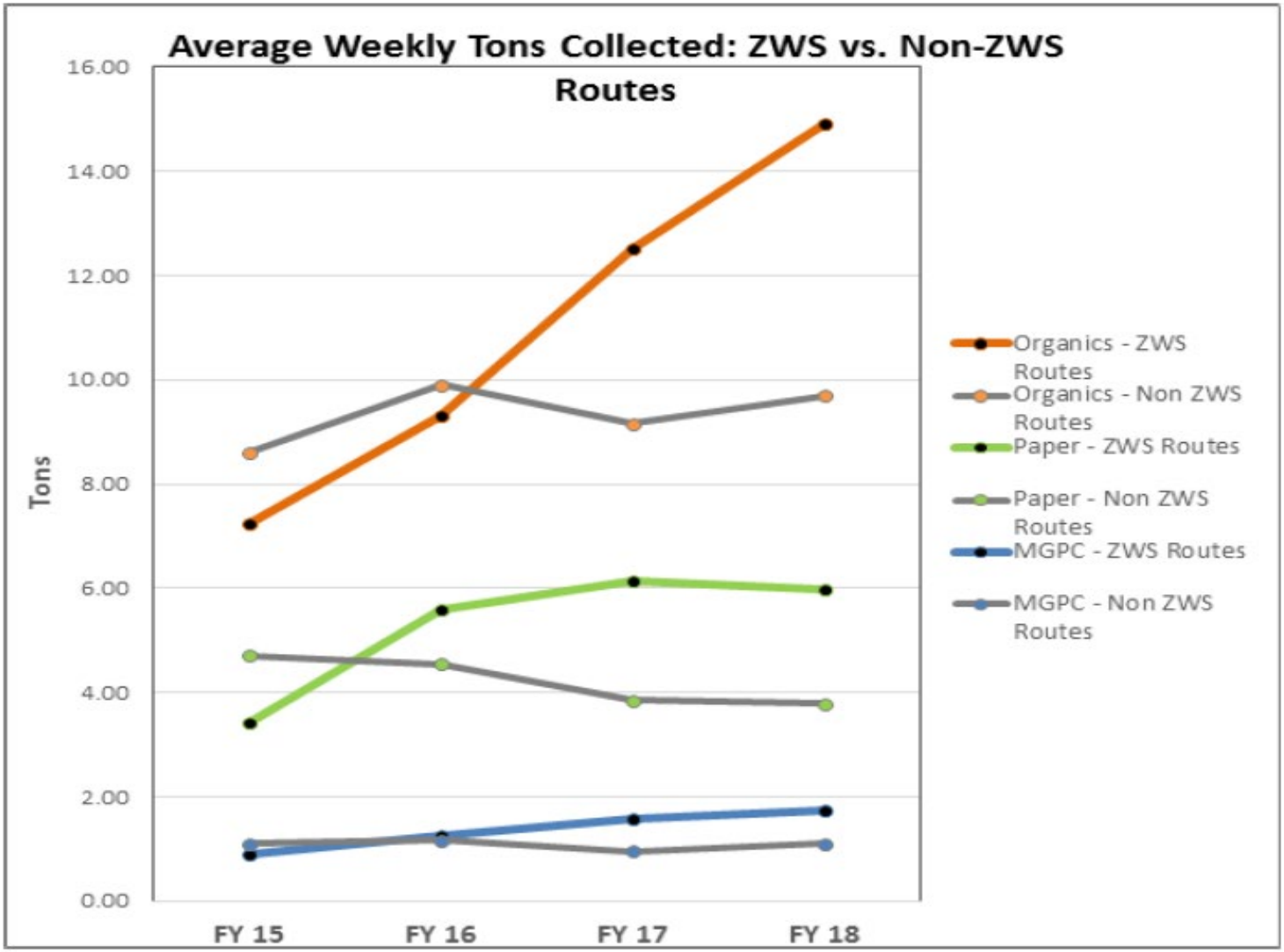
Zero Waste Schools Report: Year 3



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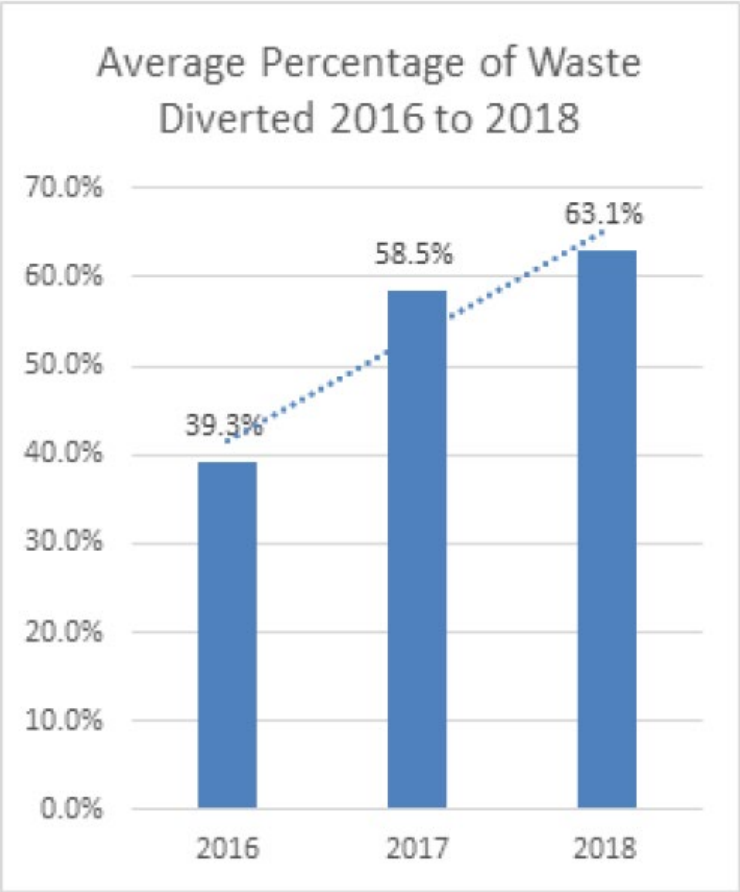
DOE-RCP's Curbside Waste Audit Snapshot

During the spring of each programmatic year, DOE and RCP outreach staff collected weights of all curbside recycling and trash bags for one week to take a snapshot of school waste diversion at ZWS. 15 buildings were chosen as representative sample. The analysis of the data recorded at these 15 buildings shed light on the amount of waste and recycling produced by each school building.



The table and graph shown left depict the average percentage of waste that was diverted away from landfills. There has been a positive trend with time. In 2016, 39.3% of all waste were materials that went to recycling (Paper, MGPC, and Organics) facilities instead of landfills. Comparatively, this increased to 58.5% in spring of 2017 and 63.1% in spring of 2018.


+
=
0×30
“x”