



The Recycling Riptide: Strong Currents Challenging Sustainable Solid Waste Management

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Onondaga County Resource Recovery Agency



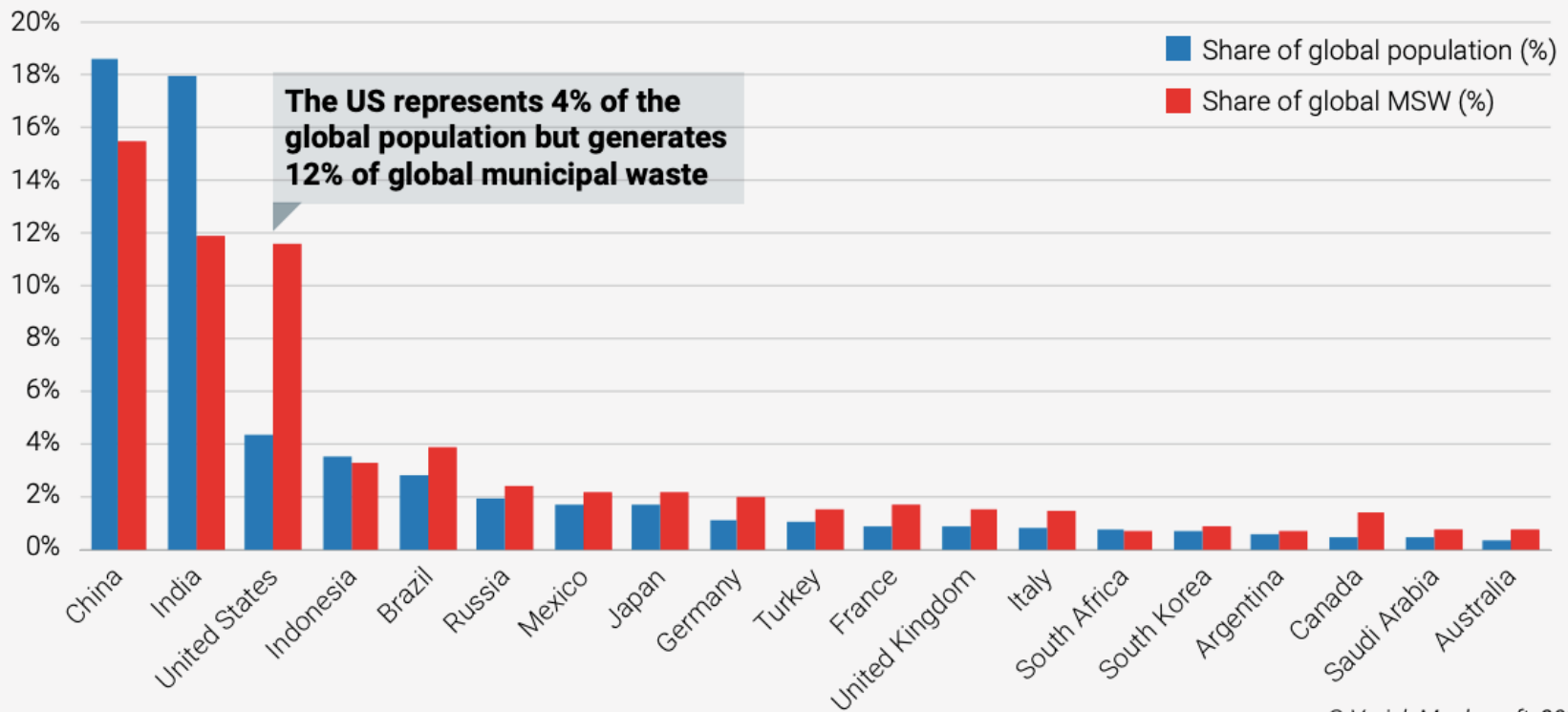
Objectives

- Introduction to the OCRRA system and components of trash
- Understanding Greenhouse gas impacts from Solid Waste Management Options
- Review solid waste management approaches and challenges
 - Food Waste Diversion: The Composting Process
 - Recycling: Materials, Markets & Responsibility
- Define policy strategies



US is #1 in Per Capita Trash Production

Figure 1: Share of global population and Municipal Solid Waste (MSW) for G20 countries



© Verisk Maplecroft, 2019

OCRRRA System

REDUCE / REUSE*

MINIMIZE WASTE

RECYCLE

AND COMPOST

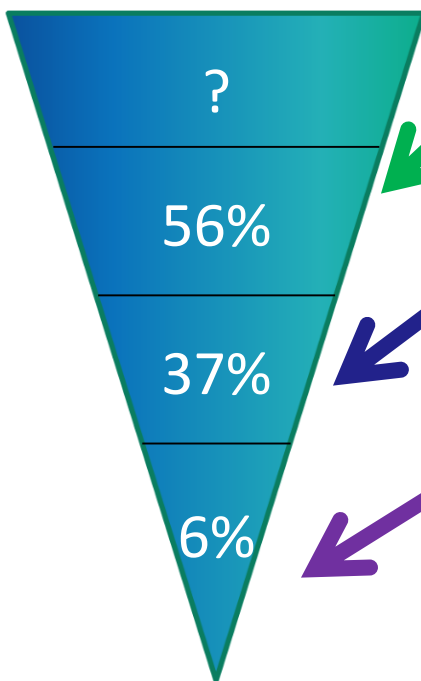
RECOVER

ENERGY

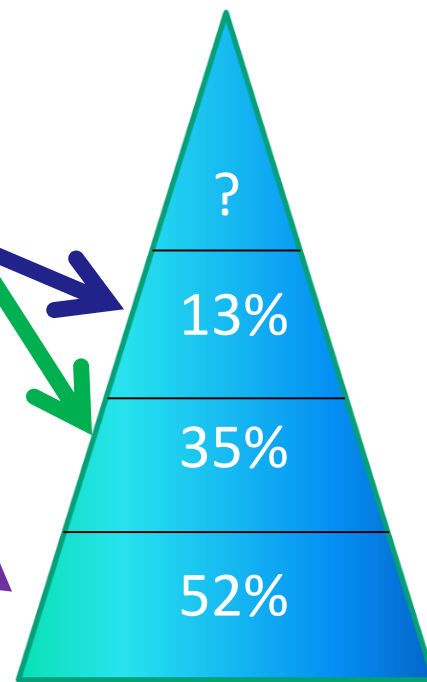
BURY

(LANDFILL)

OCRRRA'S SYSTEM (2017)



NATIONAL AVERAGE



* Items minimized through reduction and reuse are not included in the percentages above, as they cannot be tracked (in any system).



OCRRA serves our community by providing a comprehensive solid waste management system that is environmentally, socially and fiscally sustainable



System Structure & Features

Material Recovery Facility

Recyclables



Waste Hauler



Waste-to-Energy Facility



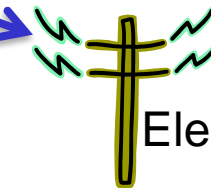
Sorted bales ready for market



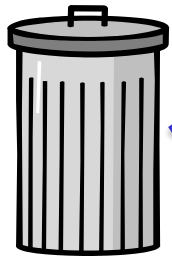
Metals for Recycling



Electricity



Municipal Solid Waste
(a.k.a. trash, garbage)



Ash



Recycling

192,000 tons



MRF



C&D

122,100 tons



Transfer Station

78,000 tons



Trash

286,200 tons



WTE

77,400 tons ash
(used as alternative daily cover)



Food

6,200 tons



Compost Site



Landfill

3,300 tons cardboard & metal

12,500 tons metal

40,800 tons

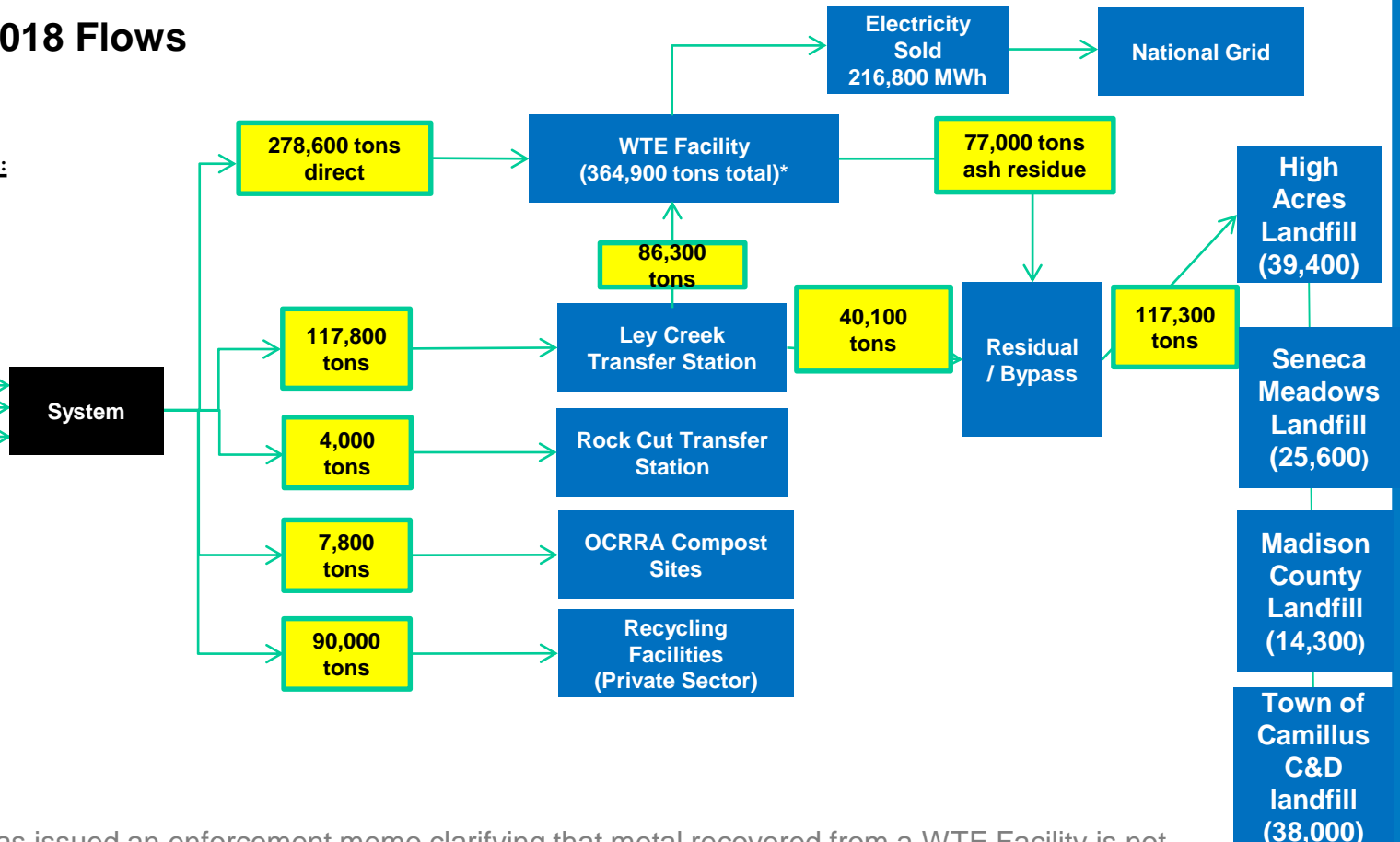


The System: Flows of Input and Output

2018 Flows

Annual Tons From:

- Private Haulers
~75%
- Drop Off
~12.5%
- Municipal Haulers
~12.5%

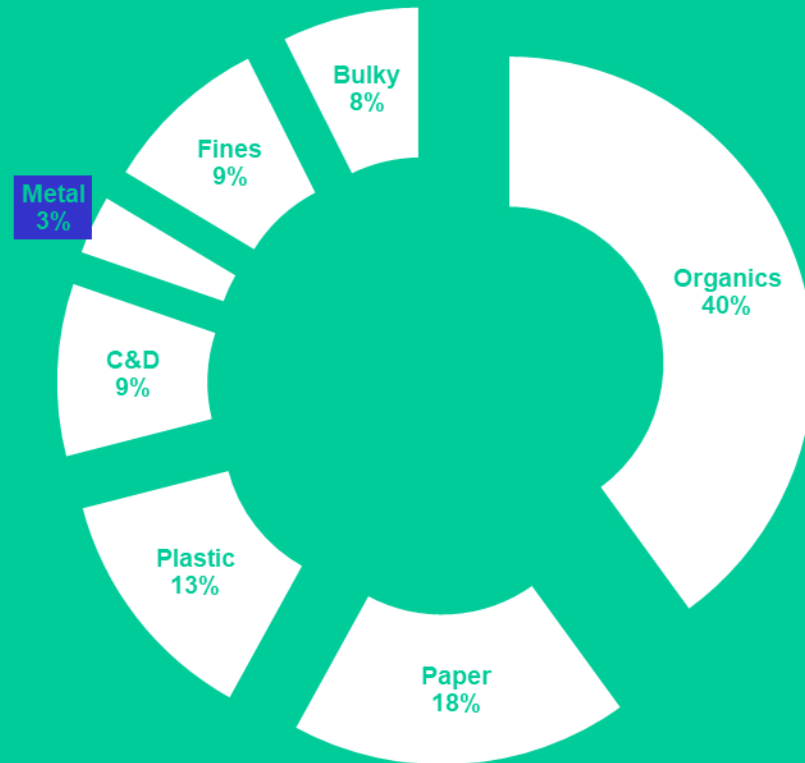


*The NYSDEC has issued an enforcement memo clarifying that metal recovered from a WTE Facility is not counted against that Facility's permitted tonnage. This action effectively increases the capacity of OCRRA's WTE facility to 372,000 tons. The action is currently effective through 2021, and OCRRA is working towards a permanent increase

What's in a Ton?

Material	Tonnage 2018
Organics	145,800
FOOD	63,790
Textiles	27,000
Sanitary	18,225
Other	37,400
Paper	65,610
Paper towels	31,711
Junk mail	12,400
Kraft Paper/OCC	8,750
OTHER	12,400
PLASTICS	47,400
Film	25,515
Bulky/Rigid	10,935
Other	7,290
BLUE BIN	3,645

ONONDAGA COUNTY MSW
BREAKDOWN 2019





Recycle Curbside:



Newspapers, magazines, catalogs, softcover books
Keep loose. Don't tie.



Papers, mail, envelopes



Cardboard, pizza, pasta, cereal boxes, etc.
Flatten.



Milk and juice cartons
Empty and rinse.



Plastic bottles and jugs
Empty and replace cap.

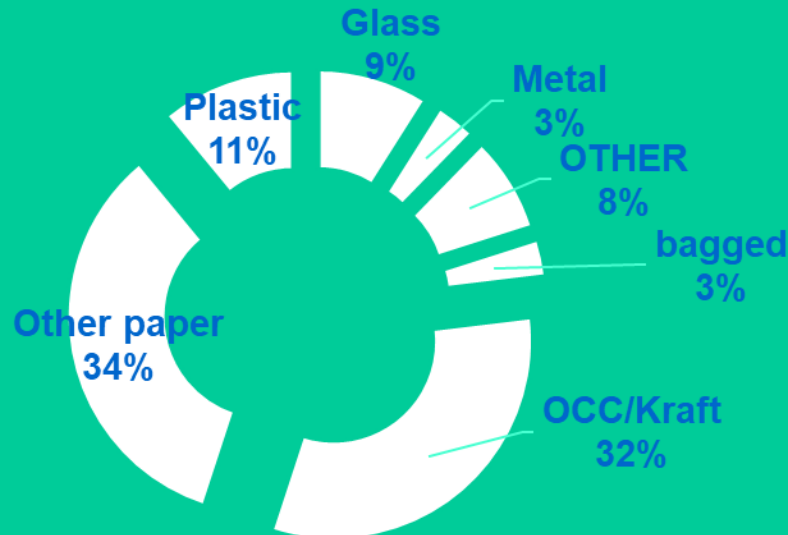


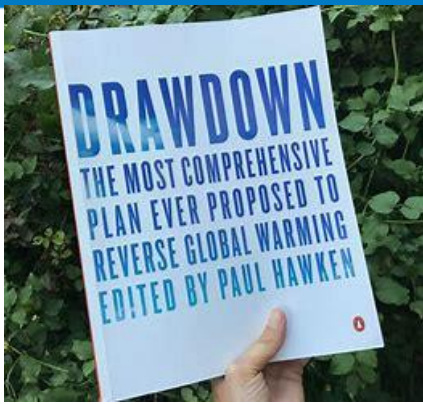
Cans and jars
Empty and rinse. Labels ok.



Plastic dairy tubs
Empty and rinse; no lids.

ONONDAGA RECYCLE BIN 2019





The DRAWDOWN

Top 100 global solutions to reduce GHG now

- **#3: Reduce Food Waste**
 - 70.53 Gigatons avoided, if 50% global food waste reduced by 2050
- **#55 Household Recycling**
 - 2.77 Gigatons avoided if average global recycling rates at 65% by 2050
- **#68 Waste to Energy**
 - 1.1 Gigatons avoided if 62.6 GW of WTE facilities installed globally by 2050.

Source: *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming*, Edited by Paul Hawken, 2017

GHG Avoidance from Recycling

721,610 tons CO₂e avoided through comprehensive county-wide recycling program (in 2017)

Material	Tons Recycled/ Composted	GHG Emissions Mitigated (MTCO ₂ E)
Food	100,140	-4,006
Yard Waste	26,150	-1,046
Wood	4,100	-7,585
Mixed Plastics	8,925	1,785
Mixed Metals	102,616	-340,685
Corrugated Box	70,947	-185,172
Magazines	3,258	-8,797
Newspaper	16,884	-36,638
Mixed Paper - Office	41,620	-125,692
Books	679	-1,779
Glass	9,671	-2,418
Electronics/Batteries	4,146	-9,577
		-721,610

GHG Avoidance from WTE

- Processing non-recyclable waste at the WTE Facility avoided **273,649 tons*** of CO₂e in 2018

* based on 0.75 ton CO₂/ton processed based on NYS Waste-to-Energy GHG Reduction Overview, July 2016



OCRRA's sustainable solid waste system avoids almost 1 million tons of CO₂e each year

Challenges

- Recycling Markets
- Adapting to regulatory approaches to emerging contaminants.
- Diminishing landfill capacity in New York State.
- CLOSING THE LOOP: managing the end of life at at inception.
 - EPR, Plastic Bag Bans,
 - Shifting Cultural Values on Disposability
→ Valuing Durability

We Waste a LOT of Food !

- **Nationally, about 35 million tons/year; \$165 billion wasted**
- **In Onondaga County: about 63,790 tons of food is in the trash.**
- **25% of the food we buy wasted**
- **265 lbs. / person/year**



OCRRA: A Statewide Leader in Organics Recovery

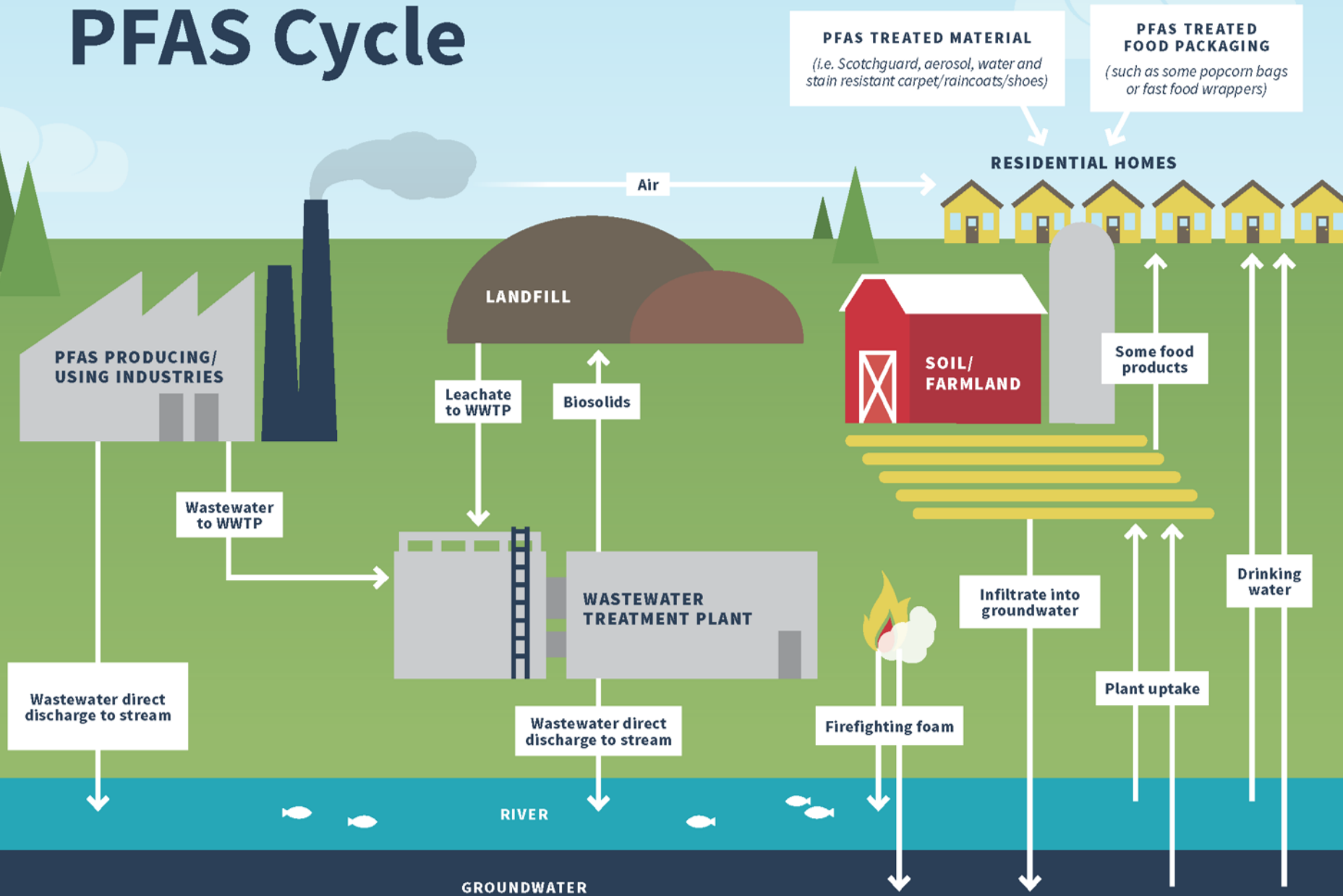


Environmental Benefits of Using Compost

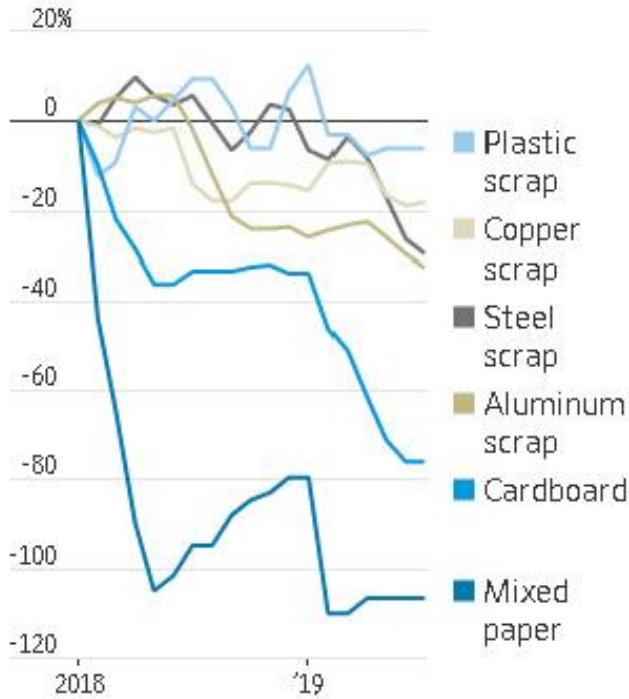
- Carbon Sequestration
- Storm Water Control
- Moisture Retention
- Erosion Control
- Robust Plant Growth
- Replaces Chemical Pesticides and Fertilizers



PFAS Cycle



Recycled commodity prices, percentage change from January 2018



2019 BLUE BIN AVERAGE BLENDED VALUE



Recycling Challenges

TOTAL PAYMENTS MADE TO OR REC'D FROM MRF

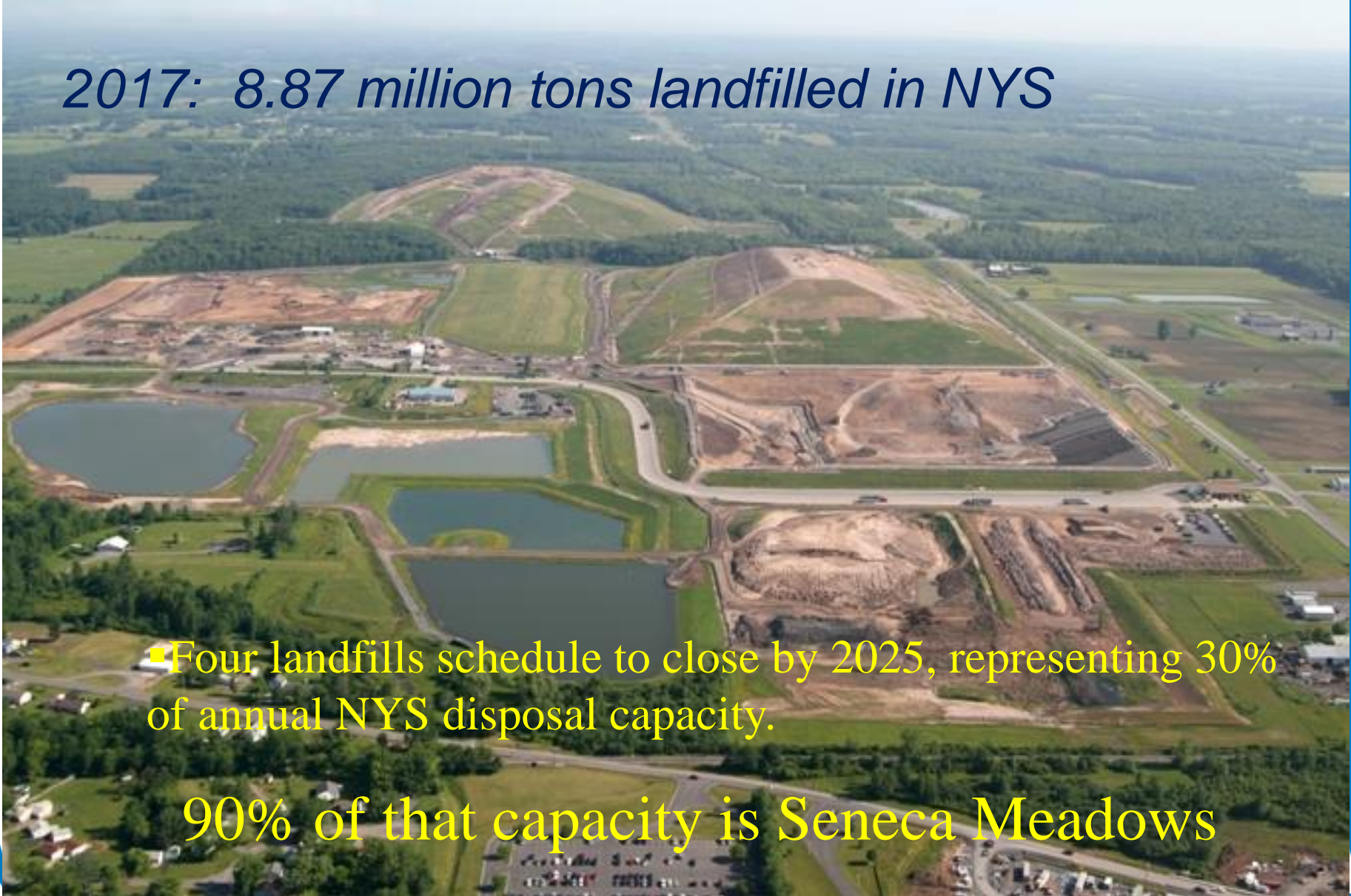
2006	\$62,504
2007	(\$64,993) rec'd
2008	(\$58,251) rec'd
2009	\$158,106
2010	(\$37,256) rec'd
2011	(\$78,251) rec'd
2012	\$36,006
2013	0
2014	(\$2,943) rec'd
2015	\$73,727
2016	\$256,648
2017	(\$123,373) rec'd note: 12-year net cost 2006 to 2017: \$187,800
2018	\$667,920
2019	\$2.0 million projected
2020	\$2.5 million projected

Strategic Disposal Capacity

2017: 8.87 million tons landfilled in NYS

■ Four landfills schedule to close by 2025, representing 30% of annual NYS disposal capacity.

90% of that capacity is Seneca Meadows



The Trash Stream ...

All products eventually reach their end-of-life and must be managed properly

No cost to
manufacturers to throw
away valuable materials

Little incentive
to create products
that last longer or
are more easily recycled



Waste Management System in the U.S.



This is a SUPPLY CHAIN Issue that Governments are Poorly Equipped to Manage

Each Day We Use Hundreds of "Complex" Products



The Trash Stream ...

Some products contain toxins.



**Beryllium, PVC,
brominated flame
retardants, lead,
copper**



4 mg mercury



**BPA,
endocrine
disruptors**



**Petrochemicals,
volatile organic
compounds**



**Brominated
flame
retardants**



0.8 g mercury



**Nickel,
lithium,
cadmium**



**4 lbs lead;
barium, nickel,
cadmium, rare
earth metals**



**Pharmaceutical
compounds**



4 g mercury

EPR: Changing How Waste is Financed and Managed

***Current Practice: Taxpayers/Governments pay
EPR: Manufacturers/Product Purchasers pay***

- Recycling collection/infrastructure built into product price or company's cost of doing business
- Producers responsible for financing and managing their products at end-of-life
- Producers internalize costs of reducing environmental externalities (unintended consequences)

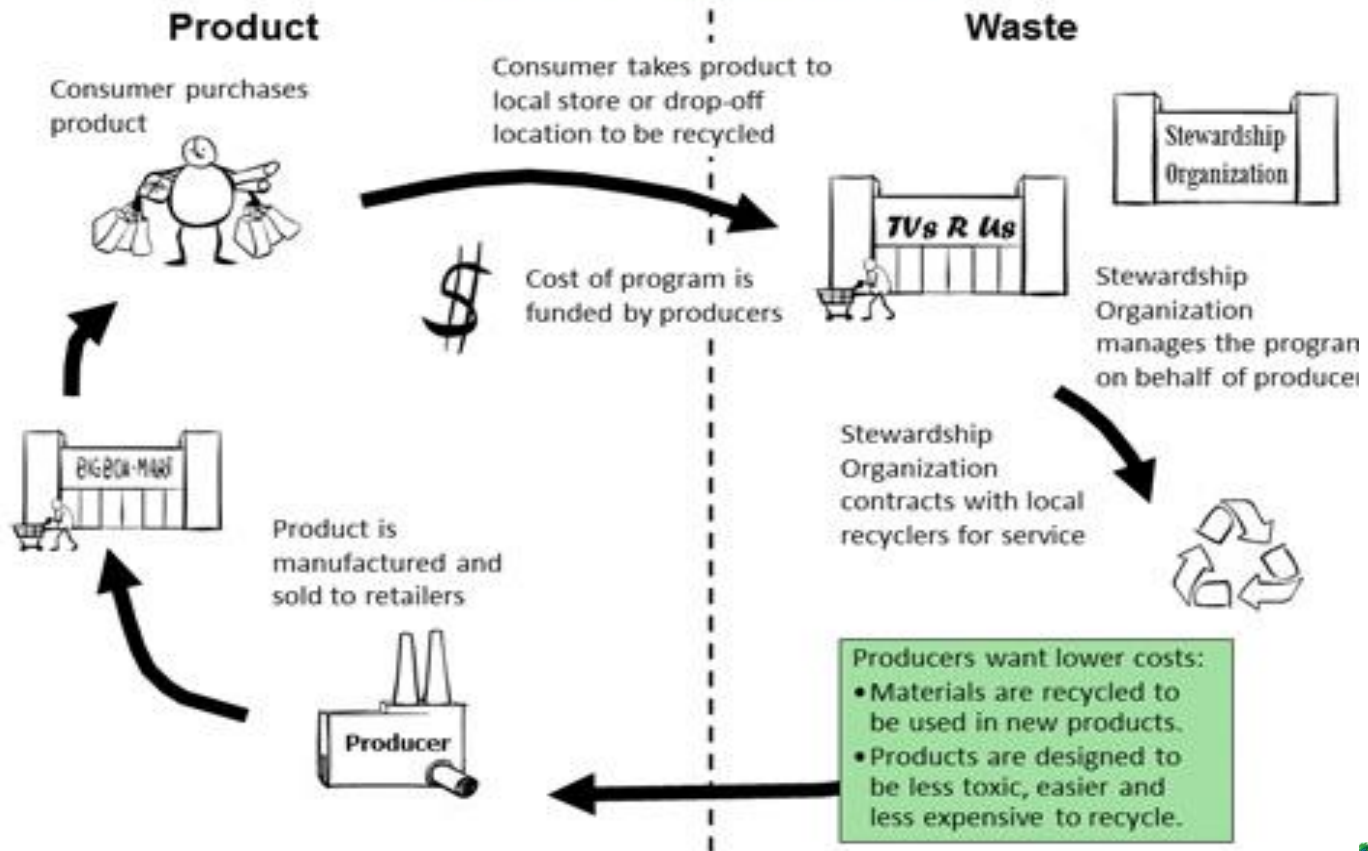
Benefits of Product Stewardship:



The Solution for Sustainable Material Management

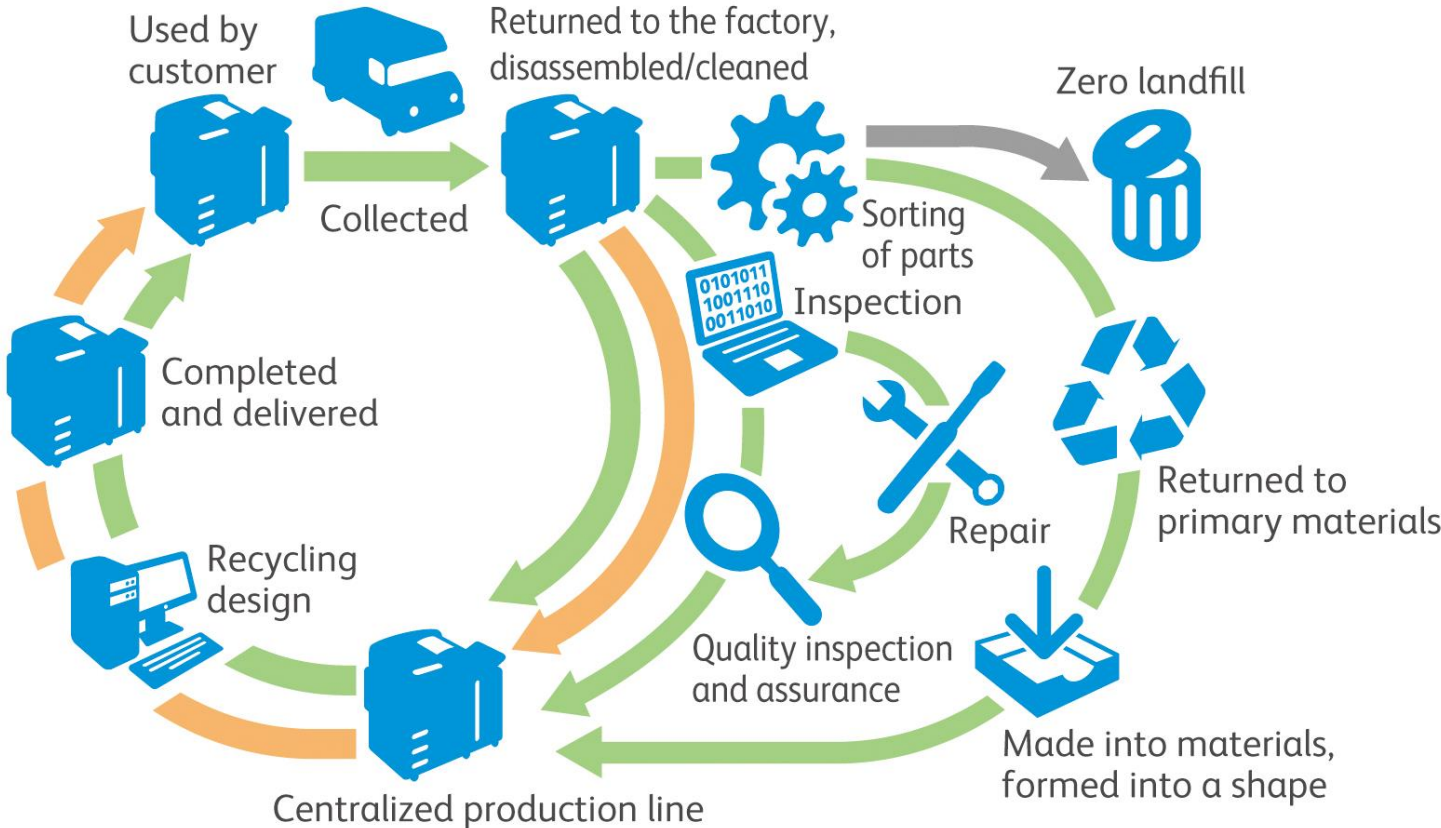
Extended Producer Responsibility

Product Stewardship






Getting Greener

Fuji Xerox Closed Loop System



packaging EPR in the world



-  In effect (mandatory & voluntary)
-  In implementation
-  Framework EPR legislation

Source: Environmental Packaging International, 2018

Plastic Bag Laws Work

- In US: 121 municipalities have taken steps to reduce the consumption of single-use plastic bags; mostly bans
- Washington D.C. after fee: 50% reduction in single use plastic bags and 40% increase in reusable bags
- Chicago after fee: 42% decrease in single use plastic bags
- Los Angeles County ban/fee: 94% reduction
- San Jose, CA ban: 89% decrease of bags in storm drains

**New York State
Plastic Bag Ban
takes effect
March 2020.**



What you can do Now

- *Ditch disposable; demand durable. Bring your own bag, coffee mug, water bottle etc.*
- *Demand EPR: Go to ((LINK)) and urge NYS to adopt EPR legislation.*
- *Know the Recycled Truth—shape is everything and numbers mean very little.*
- *Recycle outside the bin: film plastics, bottle bill, textiles etc.*

REVIEW QUESTIONS

1. How many tons of greenhouse gas emissions does OCRRA avoid by its approach to solid waste management system?
2. How is the U.S. ranked in terms of global production of MSW on a per-capita basis?
3. Name three benefits of using OCRRA Compost for an engineering project.
4. How much metal is recovered via the Waste-to-Energy Plant?
5. What is the name of the policy needed to shift responsibility for material management further up the supply chain?

SAVE
THE



WORLD



A LITTLE



EACH
DAY

