



Reduce, Reuse, Repurpose

INTEGRATING RECYCLED PLASTICS INTO NYC's ROADWAYS

Presented By:

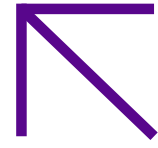
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THE AGENDA

1. Context

2. Methodology

3. Key Findings

4. Recommendations



THE PLASTIC PROBLEM

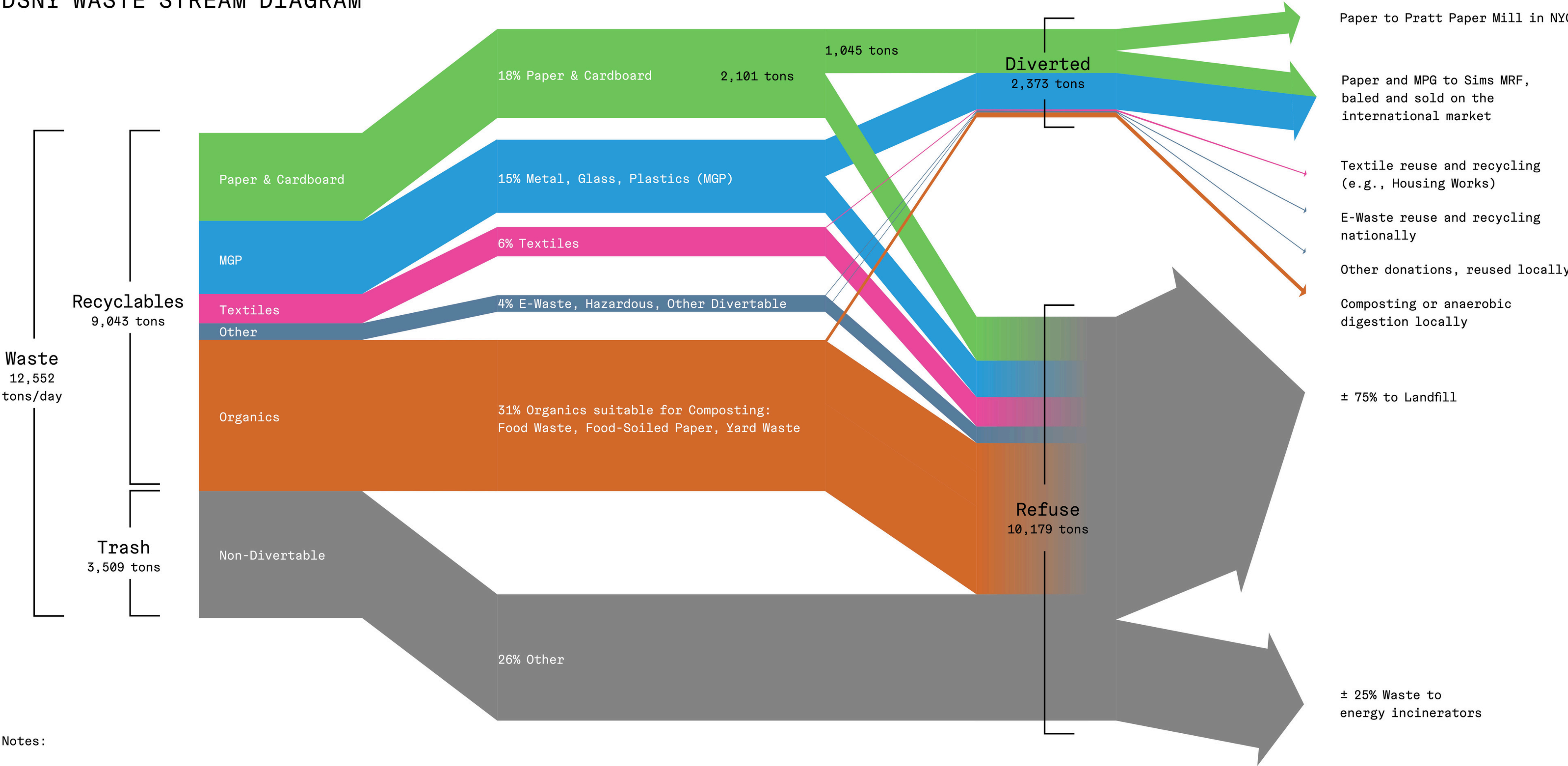
- Plastics are a persistent and large share of NYC waste stream with limited end-use markets.
- NYC is committed to advancing a circular economy framework.
- Zero Waste (100% Diversion Rate) by 2030.

OPPORTUNITY

- Infrastructure applications as potential pathway for absorbing high-volumes of recycled waste materials.



DSNY WASTE STREAM DIAGRAM



Notes:

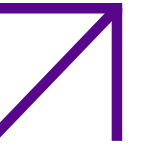
Capture rate is the proportion of recyclables that get diverted, and is measured per waste stream—e.g., for Paper & Cardboard = $1,045/2,101 = 50\%$

Diversion rate is the proportion of the total waste stream that is diverted from disposal = $2,373/12,552 = 19\%$

Refuse is defined as the waste stream that gets disposed (ie sent to landfill or waste to energy incinerators)

THE TASK

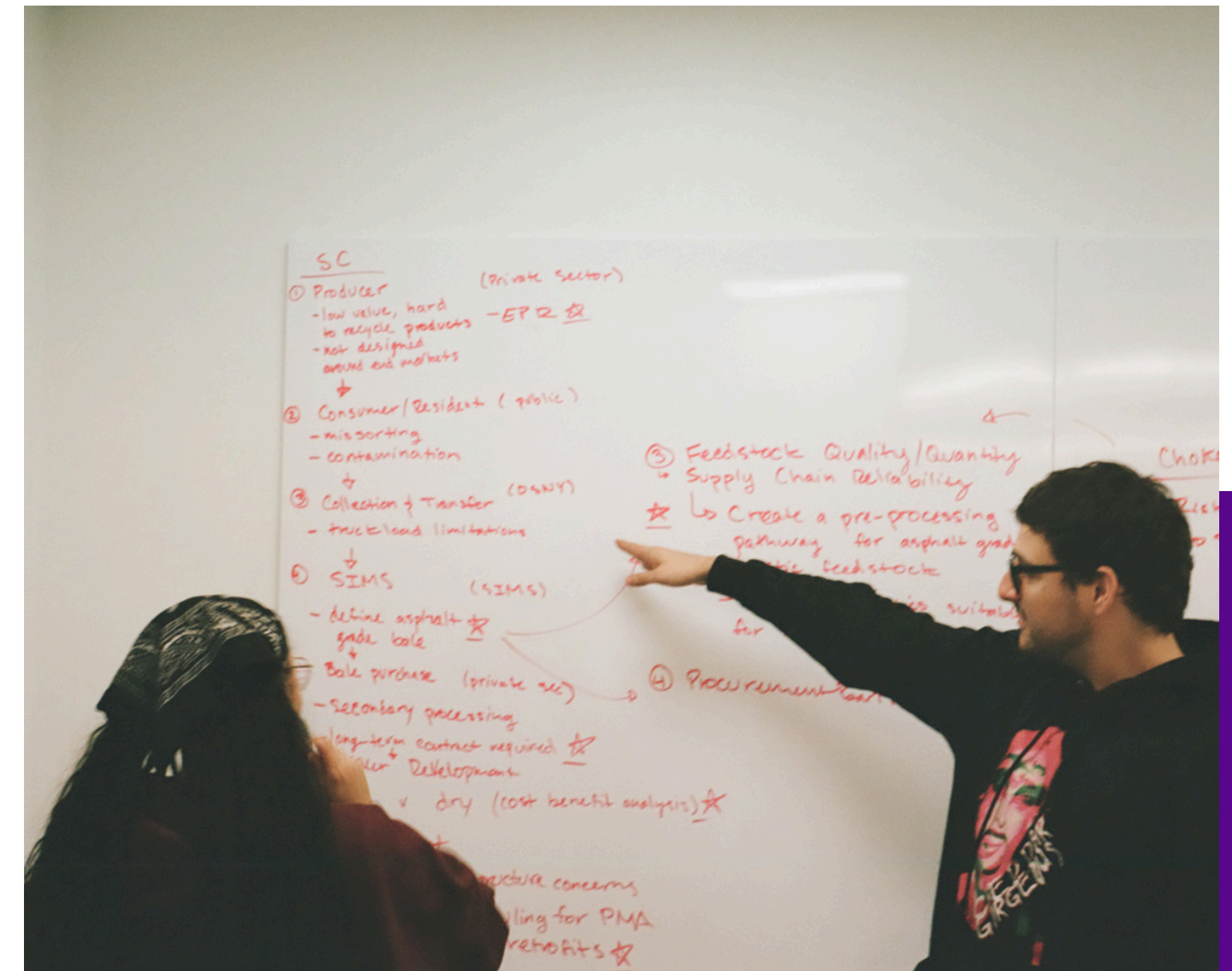
- Breach the gap between circular economy goals and excess post-consumer recycled plastics (PCRPs).
- City agencies look to infrastructure as solution.
- Evaluate the feasibility of incorporating PCRPs into roadway infrastructure.



GUIDING QUESTIONS



- ✓ What factors shape the incorporation of PCRPs into NYC roadway infrastructure?
- ✓ What are the barriers and opportunities?
- ✓ What does the existing research show?
- ✓ How can our findings inform NYC's approach?





METHODOLOGY

Literature Review

- Technical literature on recycled plastics in asphalt.
- Relevant policy and regulatory frameworks.

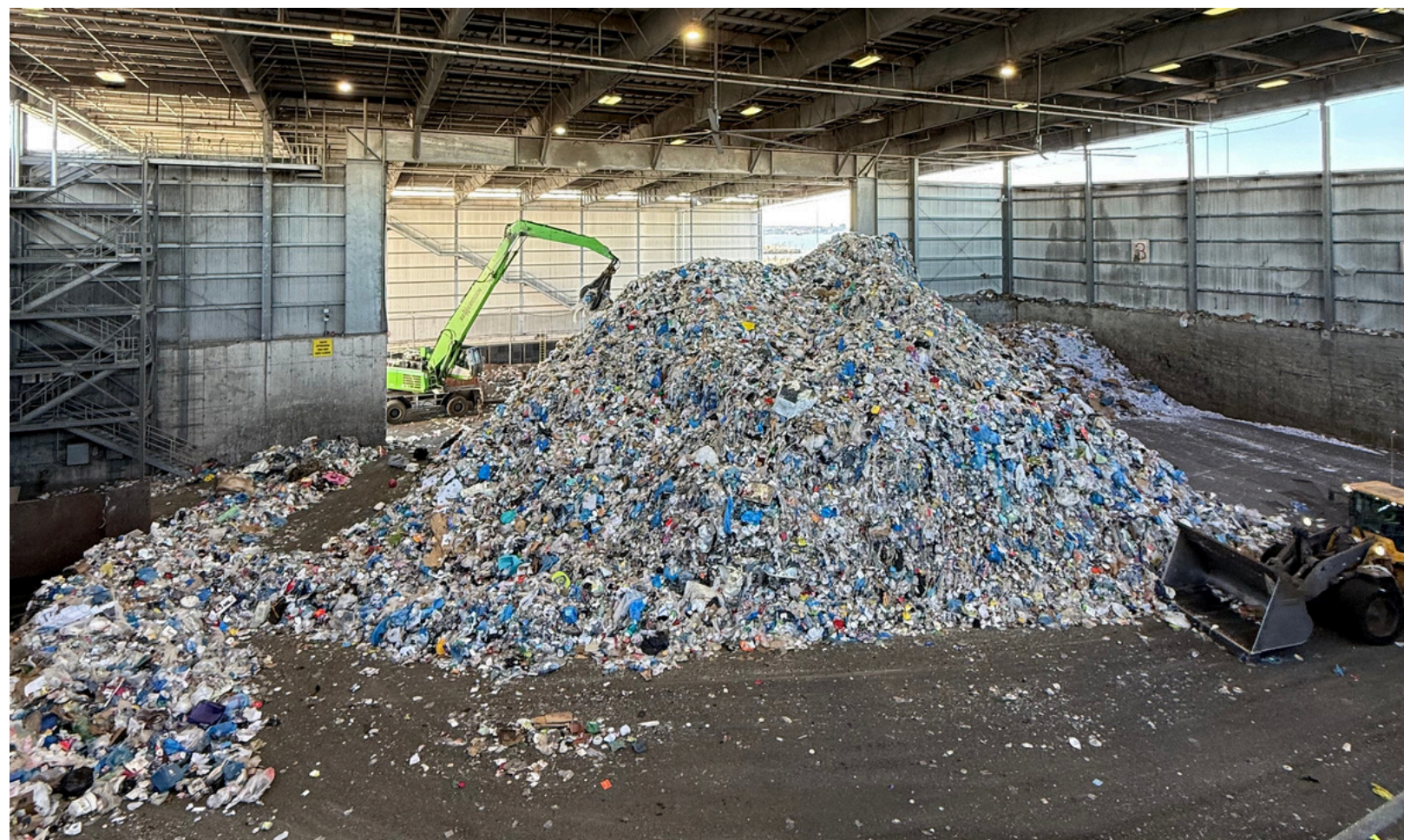
Semi-structured Interviews

- Agency staff (DSNY, DOT, DDC)
- Experts (professors and scientists)
- Private-sector actors (MacRebur, Inc.).

METHODOLOGY

Site Visit:

Circular Services Material Recovery Facility (Sunset Park, Brooklyn)



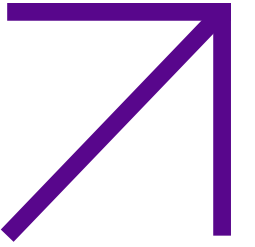


METHODOLOGY

Site Visit:

Hamilton Avenue Asphalt Plant
(Gowanus, Brooklyn)





KEY FINDINGS



KEY FINDINGS



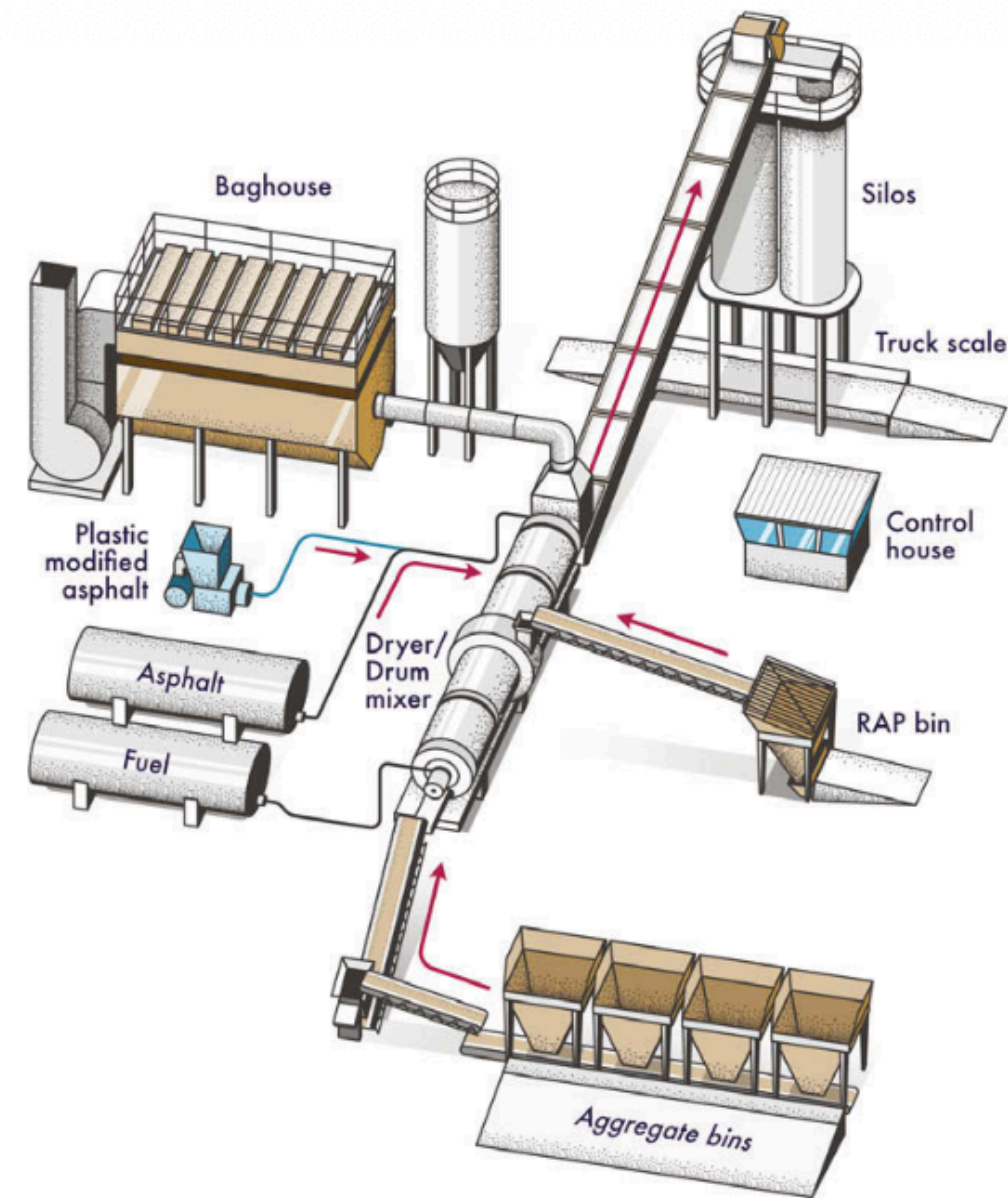
1.

INCLUDING PLASTICS IN ASPHALT IS SCIENTIFICALLY AND TECHNICALLY POSSIBLE

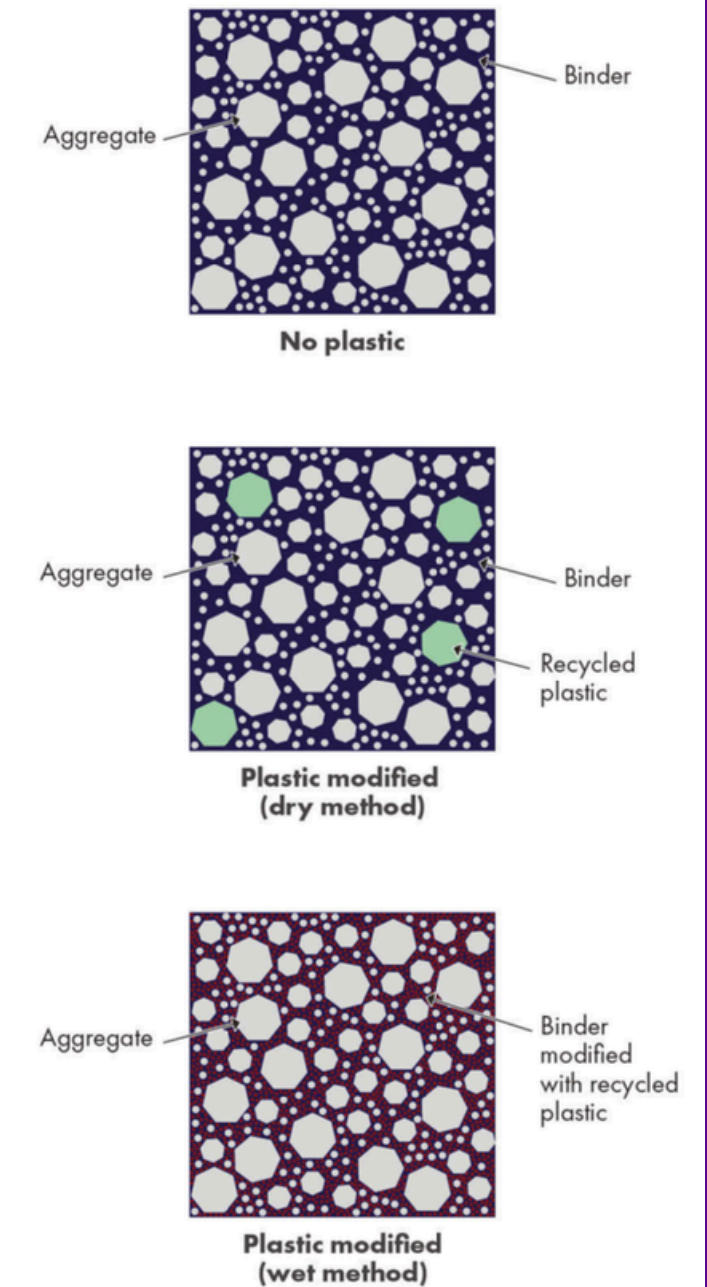
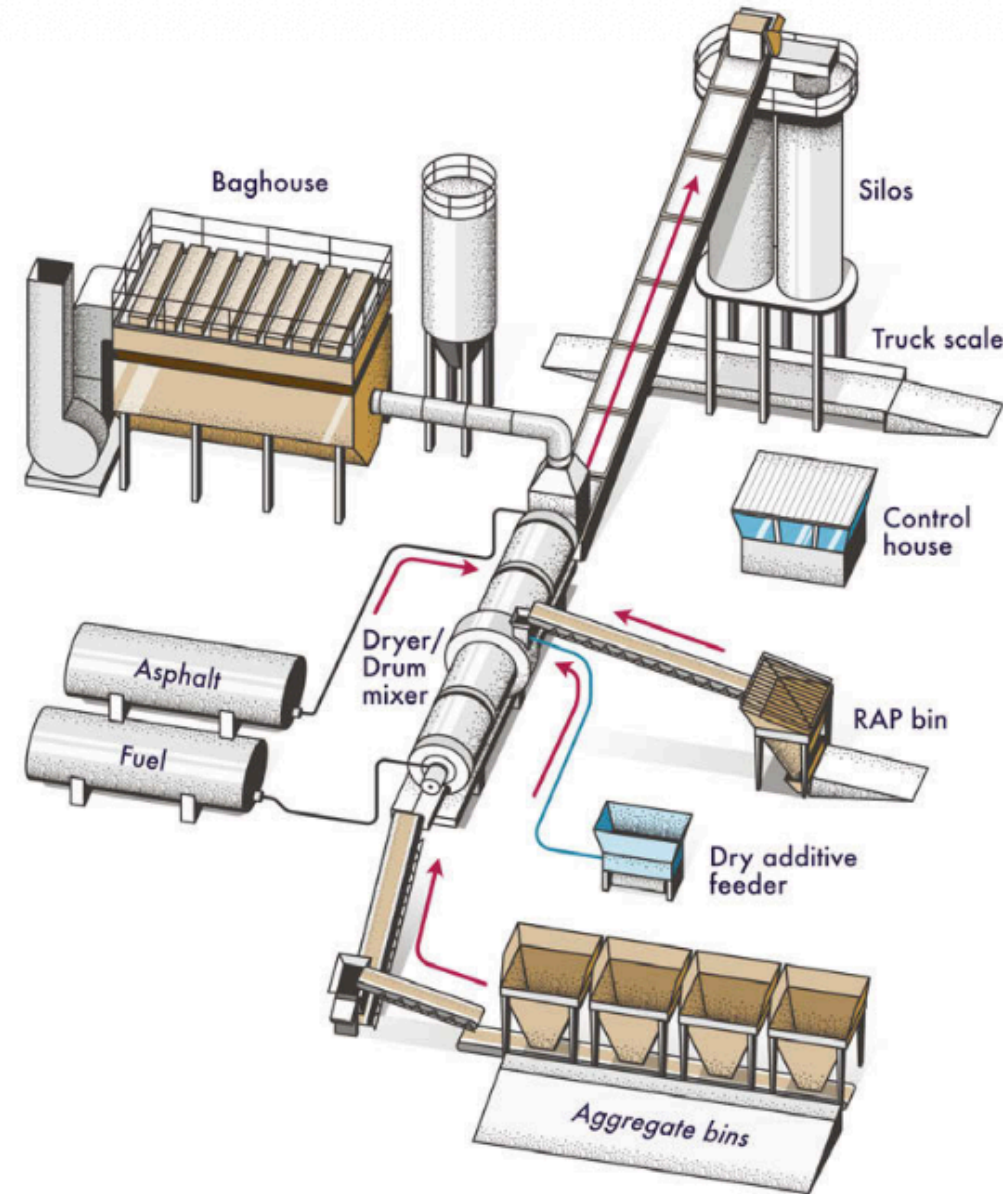
- Scientifically proven
- Small, recent pilots executed
- Public and private sector involved



WET PROCESS



DRY PROCESS



HOW IS ASPHALT MADE?

AND WHERE COULD PLASTIC BE ADDED?



KEY FINDINGS



2.

ONLY CERTAIN PLASTICS CAN BE USED FOR ASPHALT.

- Chemical/physical constraints
- Economic concerns



						
PETE	HDPE	PVC	LDPE	PP	PS	Other
Polyethylene Terephthalate	High-Density Polyethylene	Polyvinyl Chloride	Low-Density Polyethylene	Polypropylene	Polystyrene	Various Plastics
Soda bottles, water bottles, food packaging	Milk jugs, detergent bottles, shampoo containers	Pipes, window frames, vinyl flooring, medical equipment	Plastic bags, six-pack rings, various containers, plastic wraps	Food containers, bottle caps, straws, textiles, automotive parts	Disposable coffee cups, plastic food boxes, cutlery, insulation	Sunglasses, compact discs, baby bottles, large water jugs
Recycled? Yes	Recycled? Yes	Recycled? Rarely	Recycled? Yes, but uncommon	Recycled? Yes	Recycled? Rarely	Recycled? Rarely
						

SOURCE: [OCEAN MATERIALS \(2024\)](#)



KEY FINDINGS



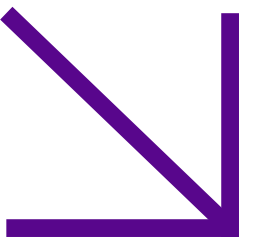
3.

THE LONG-TERM CASE FOR PLASTIC-MODIFIED ASPHALT REMAINS UNCERTAIN

- Performance considerations
- Environmental impact
- Institutional readiness
- Economic feasibility



RECOMMENDATIONS





RECOMMENDATION

1.

CREATE A TASK FORCE TO OVERSEE CIRCULAR ECONOMY EFFORTS

- Circular economy as the broader mission, plastics in asphalt as part of it
- Bring together all relevant agencies under a Deputy Mayor's purview





RECOMMENDATION

2.

IMPLEMENT A STANDARDIZED PILOT PROGRAM WITH THE PRIVATE SECTOR

- One cohesive design techniques
- Unified, purposeful metrics
- Cluster pilots around plant cycles
- Evaluate all possible applications
- Bring in academia through Town+Gown
- Private sector as partners





RECOMMENDATION

3.

ALIGN ADOPTION PATHWAYS FOR RECOVERED MATERIAL-BASED INFRASTRUCTURE COMPONENTS

- NYSDEC Beneficial Use Designations
- AASHTO binder standards
- NYSDOT Approved Materials List



CONCLUSIONS

- Using PCRPs in asphalt is possible, with clear and important caveats.
- Due to the complexity and limited potential impact, we propose:
 - Mayoral Task Force to govern recovered materials across agencies
 - Structured pilots: uniform metrics, technique, various applications, third-party participation
 - Clear the regulatory path: beneficial use, AASHTO, NYSDOT approval





GOT
QUESTIONS?
OR ANY PLASTIC WE CAN USE?