

Depackaging & Commercial Composting - An Integrated System for Organics Recycling



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History of Trash: Reuse and End Markets



Rag Collectors (1896),
Photo by Alice Austen, NYPL



Sorting Refuse from Belt Conveyor at West 47th NYC (1907)
Photo by George Lane

Paradigm Shift: Organics Management



Anaerobic Digestion



Commercial Composting



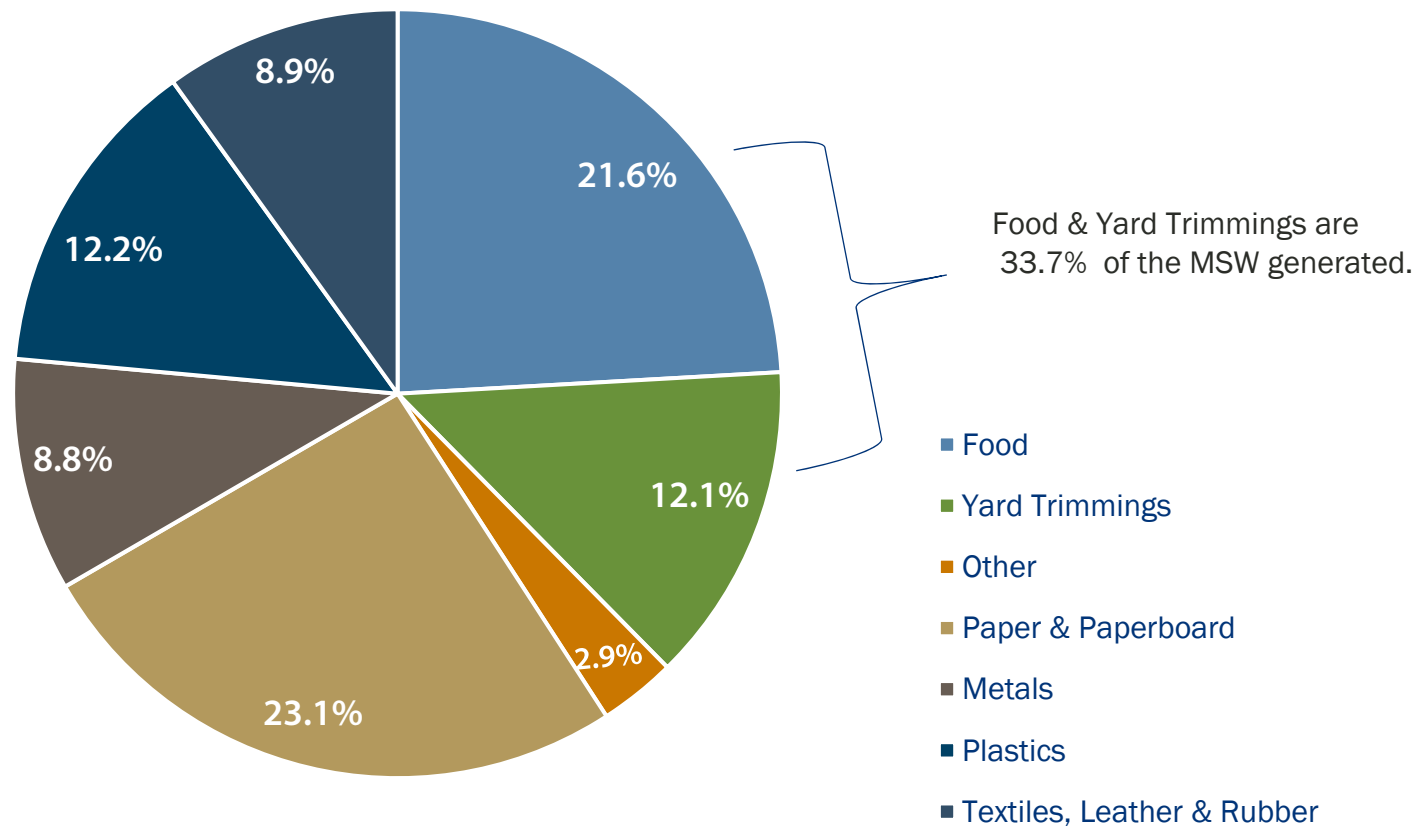
Home Composting

- New thinking about **Solid Waste as a Resource**.
 - Diversion /reducing disposal
 - Infrastructure
 - Opening new markets with renewable products
 - Soil amendments
 - Biogas, energy
 - Biotechnology/green chemistry
- Paradigm Shift to a more **Circular Infrastructure and Economy**.
- Organics is the next **Solid Waste Commodity**.

EPA Advancing Sustainable Materials 2018 Report

November 2020

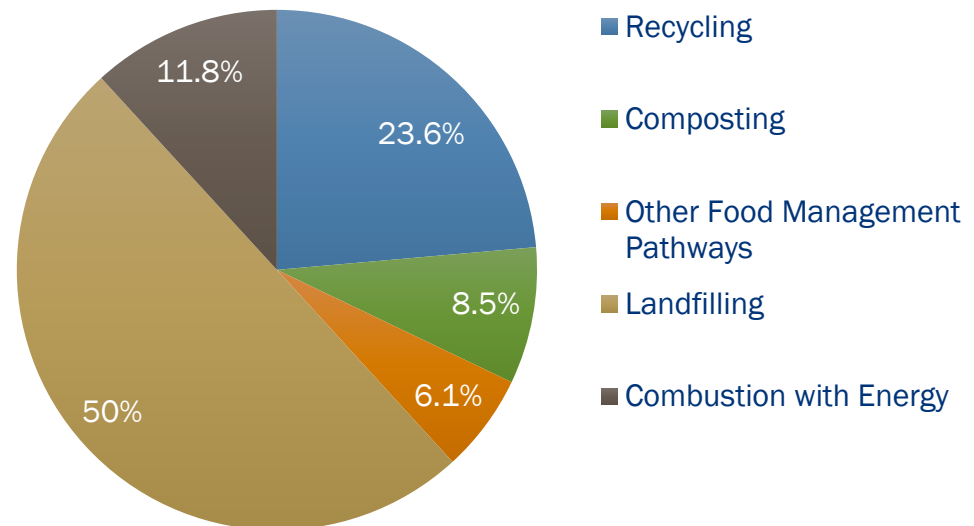
Total MSW Generation By Material 2018 292.4 Million Tons of MSW Generated in US



EPA Advancing Sustainable Materials 2018 Report

Management of MSW

- ✓ 25 Million tons (8.5) of materials were Composted.
- ✓ 18 Million tons (6.1%) of food were processed through “Other Food Management Pathways.”



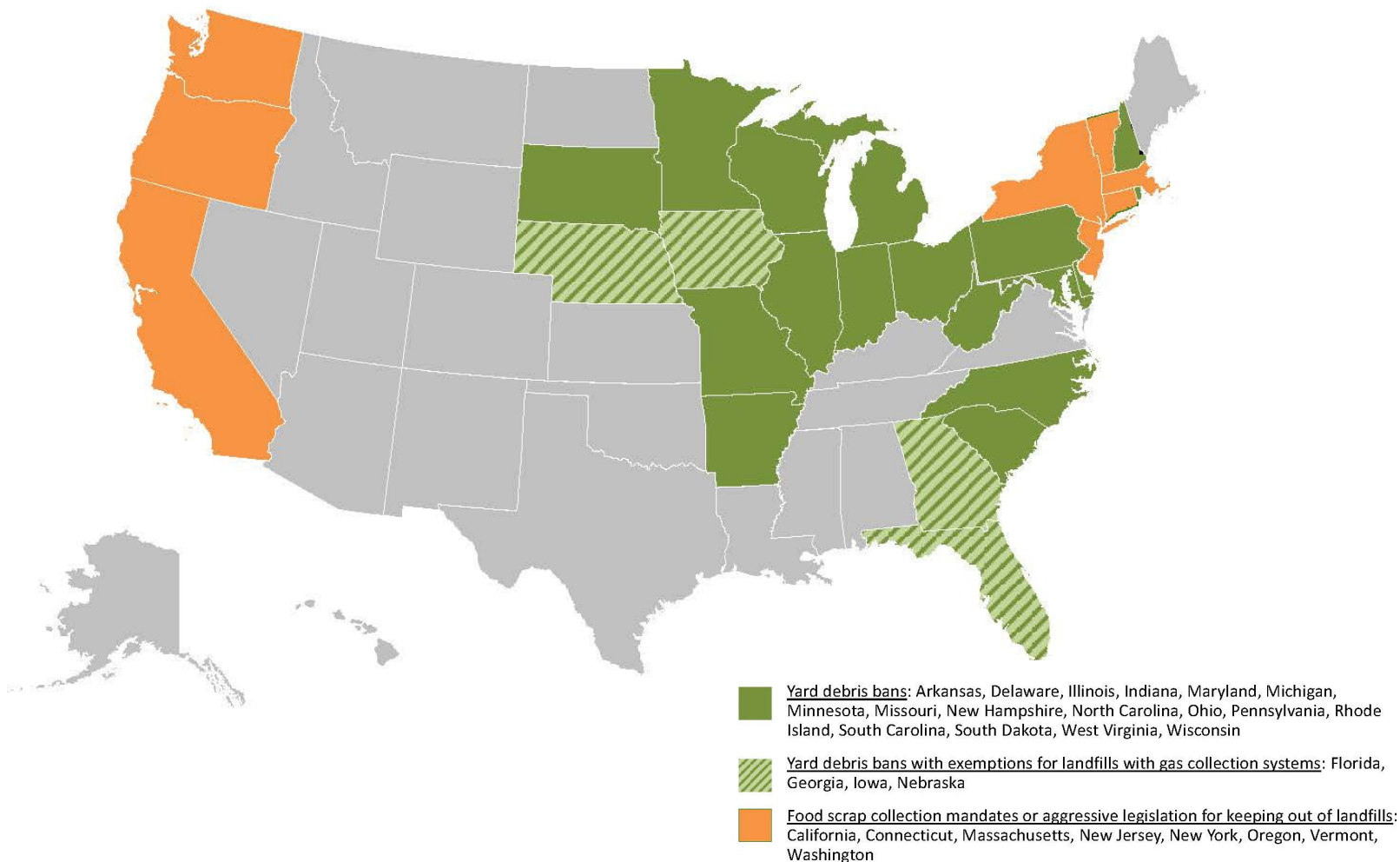
EPA's Food Measurement Methodology Estimates Food Waste Generation

6 Food Management Pathways (beyond composting, landfilling, and combustion with energy)

- Donation
- Animal Feed
- Land Application
- Codigestion/AD
- Sewer/wastewater treatment
- Biobased materials/chemical processing

Organics Bans and Diversion Mandates as of December 2020

[Source: US Composting Council organics bans](#)



Depackaging Food Waste: Industrial, Commercial and Institutional (ICI)

Driven by legislation and the need to manage ICI organics.

- Evolving with a focus on diversion, contamination, and to expand the range of packaged food accepted.
 - Removal of cardboard, plastics and metal
 - Bag splitting to remove source separated organics
 - No glass
- Enables growth for Organics infrastructure.
 - Stand alone operation
 - Integrate with existing solid waste facilities
 - Systems are becoming fully covered and automated to prevent odors



Photos courtesy: Scott Equipment

Depackaging: What is Its Roll

- Eliminates the need for manual labor to remove food from packaging.
- Source separation of organics (SSO) at the commercial generator level can be time-consuming or difficult.
- Preprocessing step to eliminate waste.
 - Can be utilized for both composting and anaerobic digesters.
 - Produces + 99% clean organics stream



Photo courtesy: Scott Equipment

Example: Cases of Produce (Vegetables)



Cases before



Packaging after

Photos courtesy: Scott Equipment

Example: Produce in Plastic Containers



Before



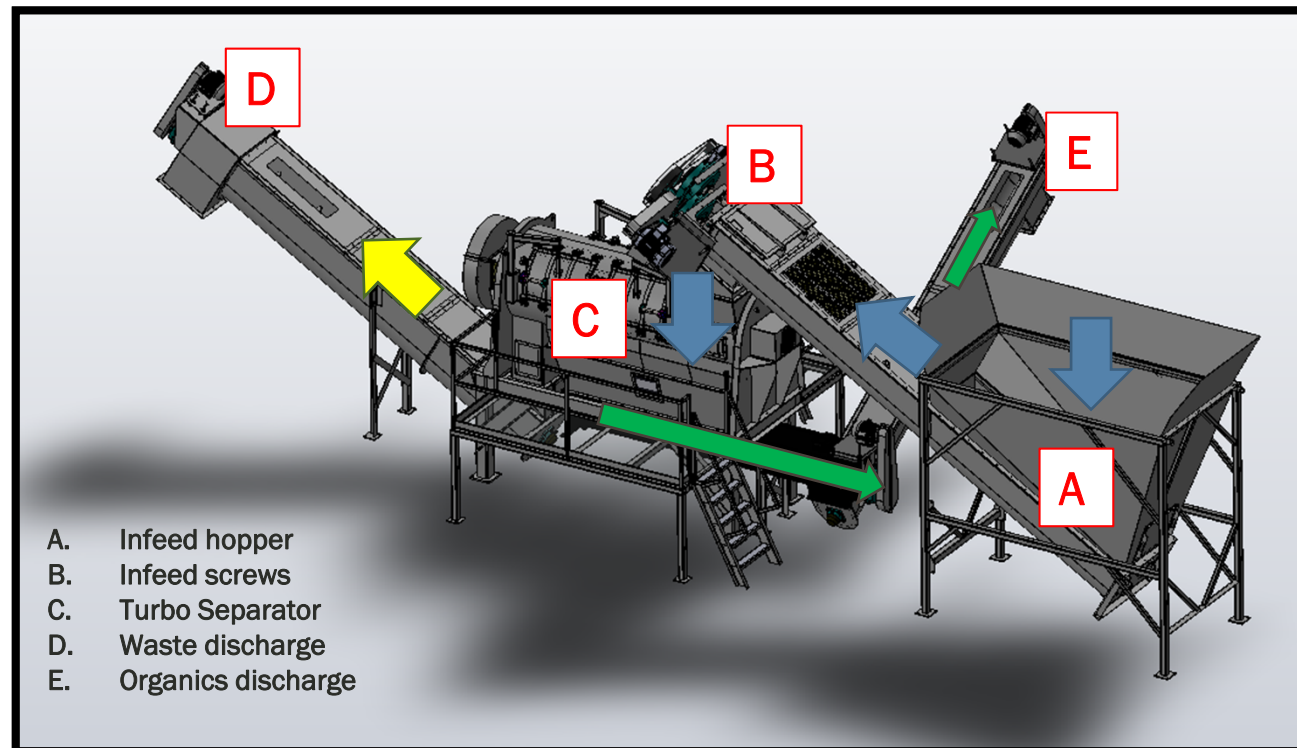
After- organics



After-packaging

Photos courtesy: Scott Equipment

Basics: How Depackaging Works



Source: www.turborecycling.com

Facilities and Robotics for Organics

- Organics Co-Collection sorting organics-filled compostable bags from the trash
- Applicable at Transfer Stations and Mixed Material Recovery Facilities.

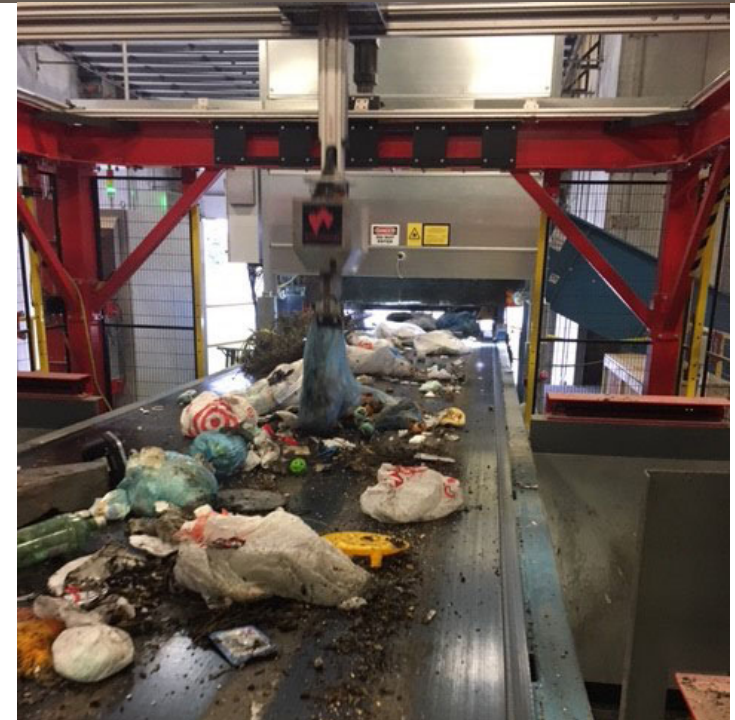


Photo courtesy: Organix Solutions & Waste Robotics, Inc.

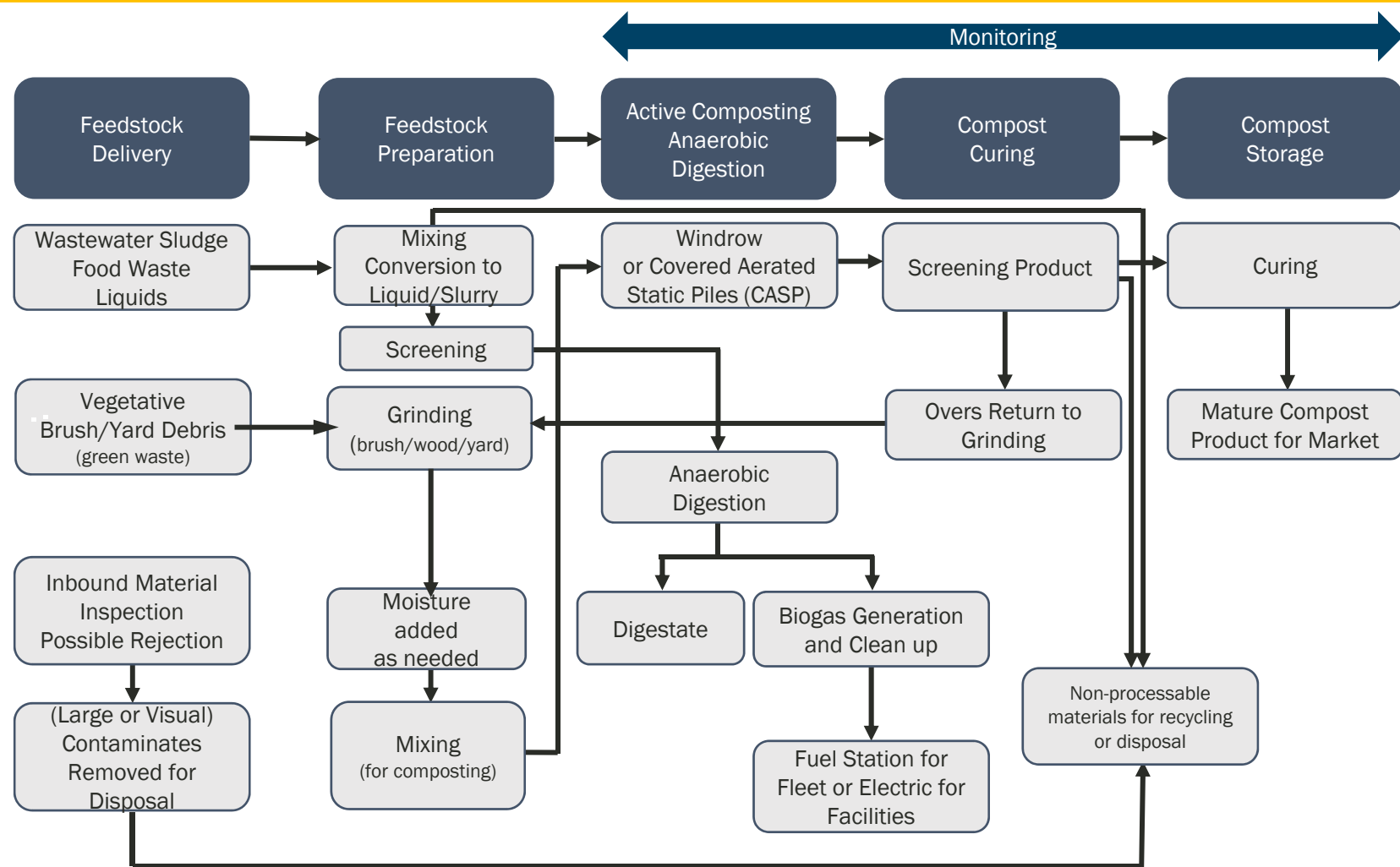
Photo courtesy: Waste Robotics, Inc.

Integrating Organics Management

- Feasibility and market studies to integrate organics management and processing
- Specific design and system layout
 - Permitting
 - Development
 - Design
- Technologies for organics collection and management
 - Inbound materials
 - Composting systems and Anaerobic Digestion technologies
- Preprocessing:
 - Material sorting
 - Depackaging
- Understand End Markets and Client needs
 - Certifications, standards for end-products
 - Compostable bags and food service items
 - Education and outreach
 - Best management processes for supporting a new organics infrastructure

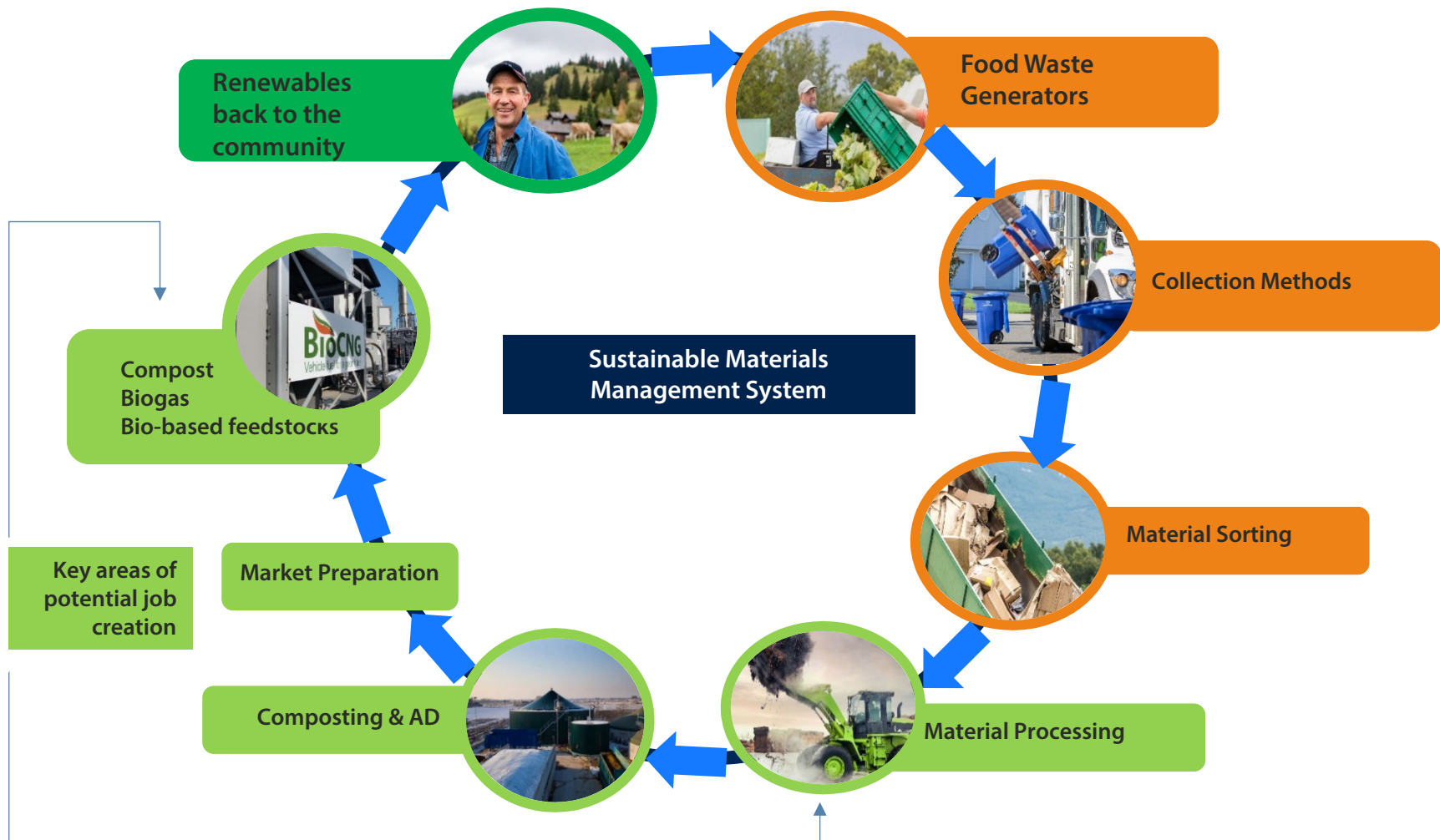


Organics Management Diagram



Source: Darby, D. Tetra Tech

Organics Management: A Circular Economy



Source: Darby, D. Organics Infrastructure in New England 2016

Thank You.

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