



# Current State of MSW and Recycling Management

February 2024  
By Brad Kelley, Senior Project Engineer  
*Gershman, Brickner & Bratton, Inc.*

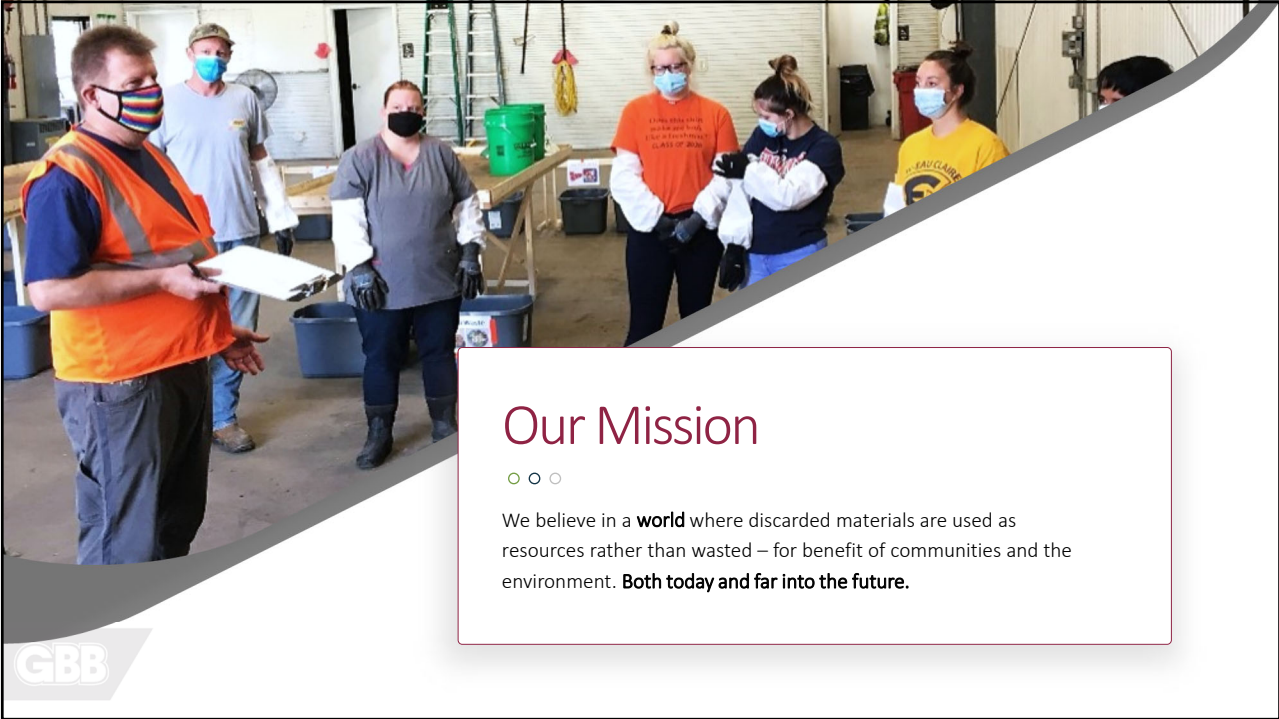
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## Today's Agenda

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- Introduction to GBB
- State of Disposal in the US
- MSW Composition
- Processing of MSW in the US
- Circular Material Management
- FCIC
- Alternative Collections
- Q&A

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**Our Mission**

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We believe in a **world** where discarded materials are used as resources rather than wasted – for benefit of communities and the environment. **Both today and far into the future.**

**GBB**

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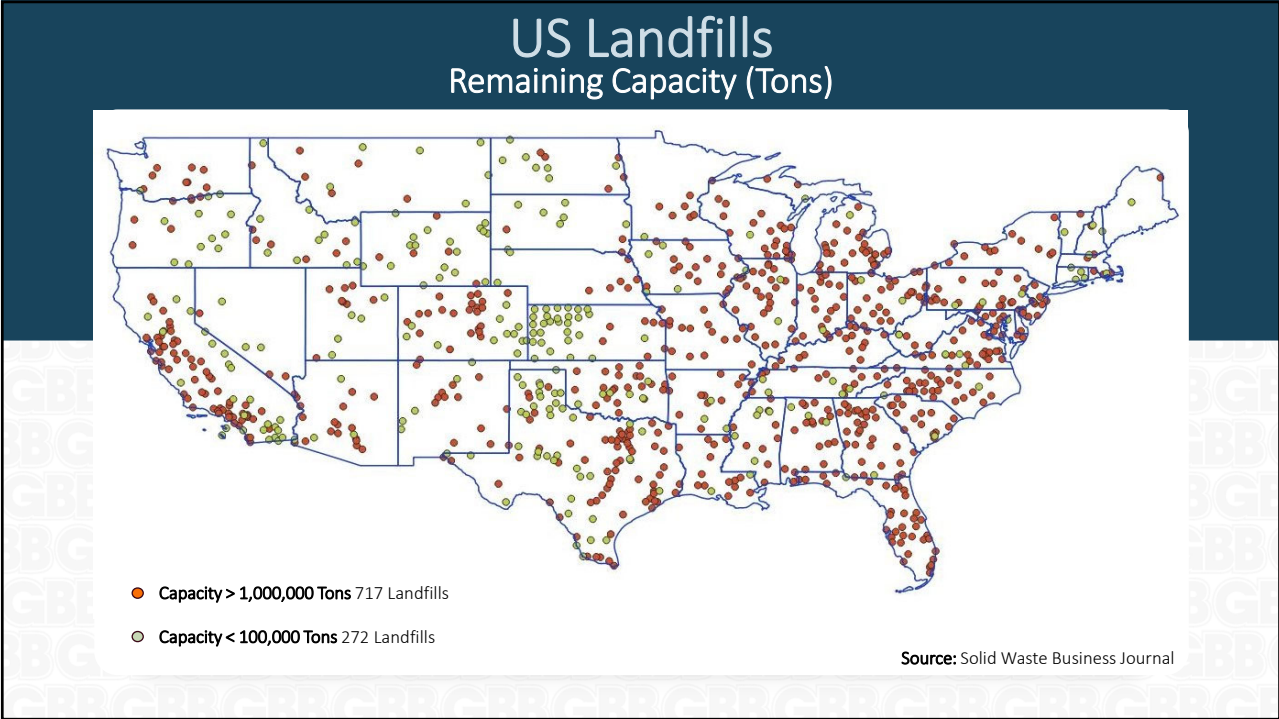


**State of Disposal in the Continental US**

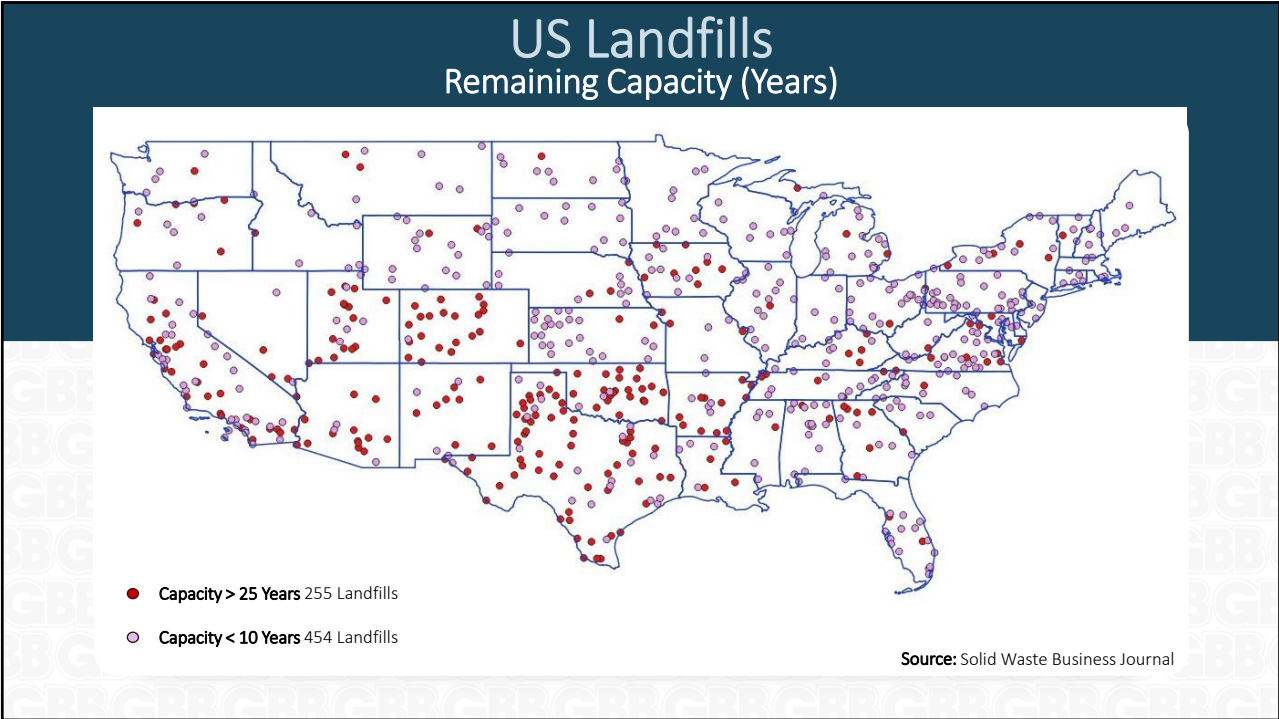
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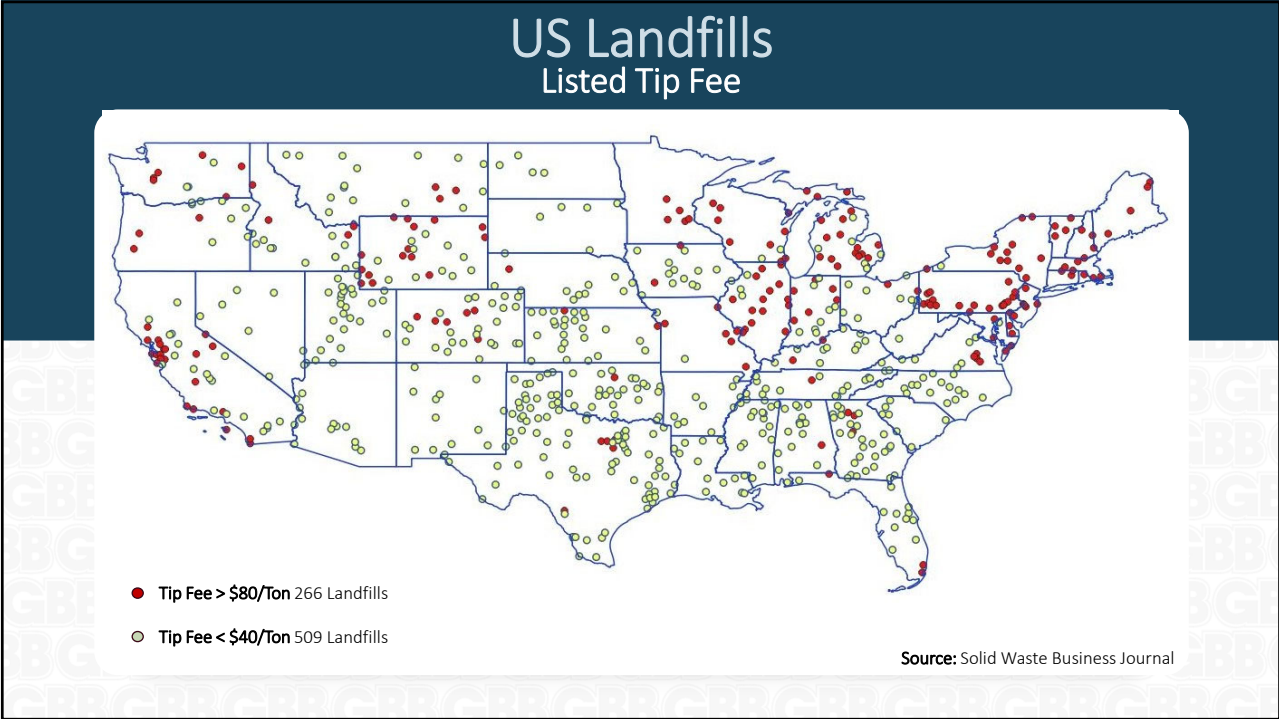




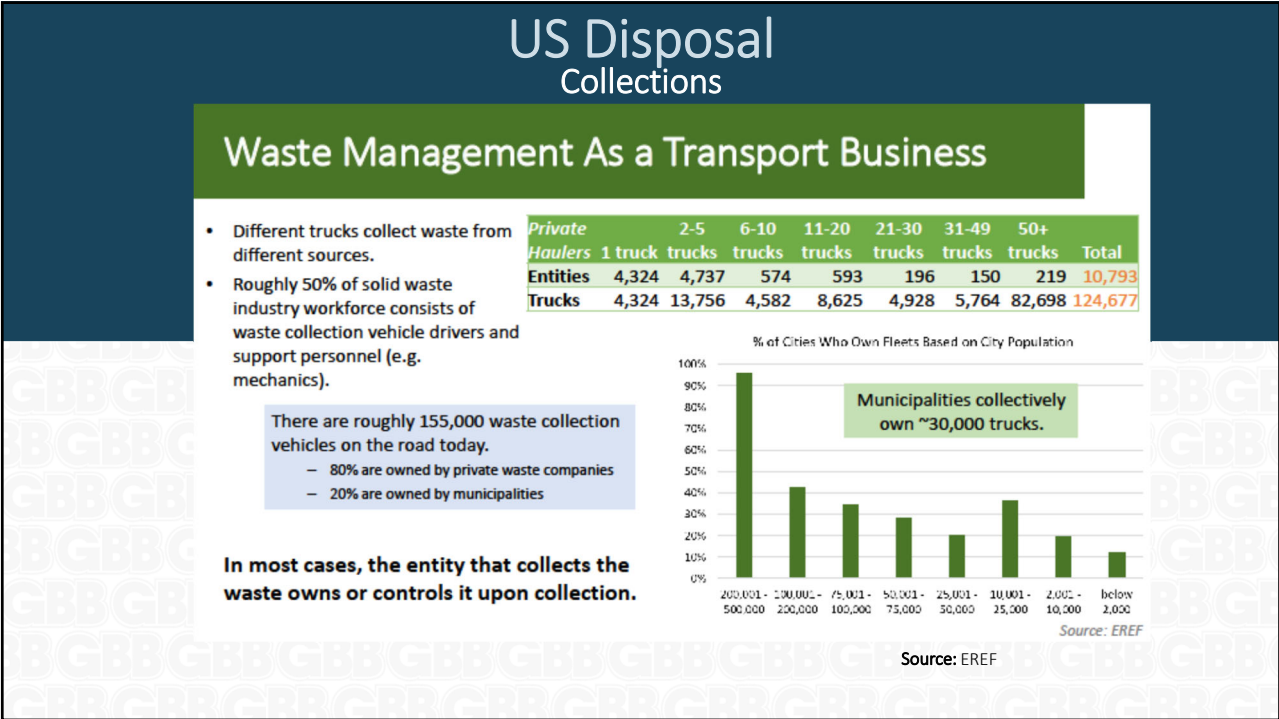
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## US Disposal End-Point Ownership

### Waste "Ownership" By Endpoint

**Number of Facilities By End Point & Ownership (preliminary data)**

Type of Facility	Private	Municipal	Unknown	Total
Landfills	550	950		1,505
WTE	43	33		76
AD (Stand alone facilities)	25	7	36	68
Compost	2,503	975	1,629	5,107
Recycling (MRF only)	667	131	53	851
Recycling (non-MRF)	3,706	596	92	4,394
<b>TOTAL</b>	<b>7,494</b>	<b>2,692</b>	<b>1,810</b>	<b>11,996</b>

- 75% of all facilities are privately owned, but a higher percentage are operated by private companies (e.g. 85% of WTE facilities are operated by private companies)
- Ownership is highly decentralized for both private and public facilities (less so for landfills)

- More tonnage goes to private facilities due to economies of scale
  - 37% of landfills are privately owned, BUT
  - 70% of landfilled tonnage goes to privately owned landfills (i.e. 47% of all collected MSW)
- Estimated that 70 – 80% of all collected MSW goes to privately owned facilities

Source: EREF

Source: EREF

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## MRF Processing Systems & Outputs

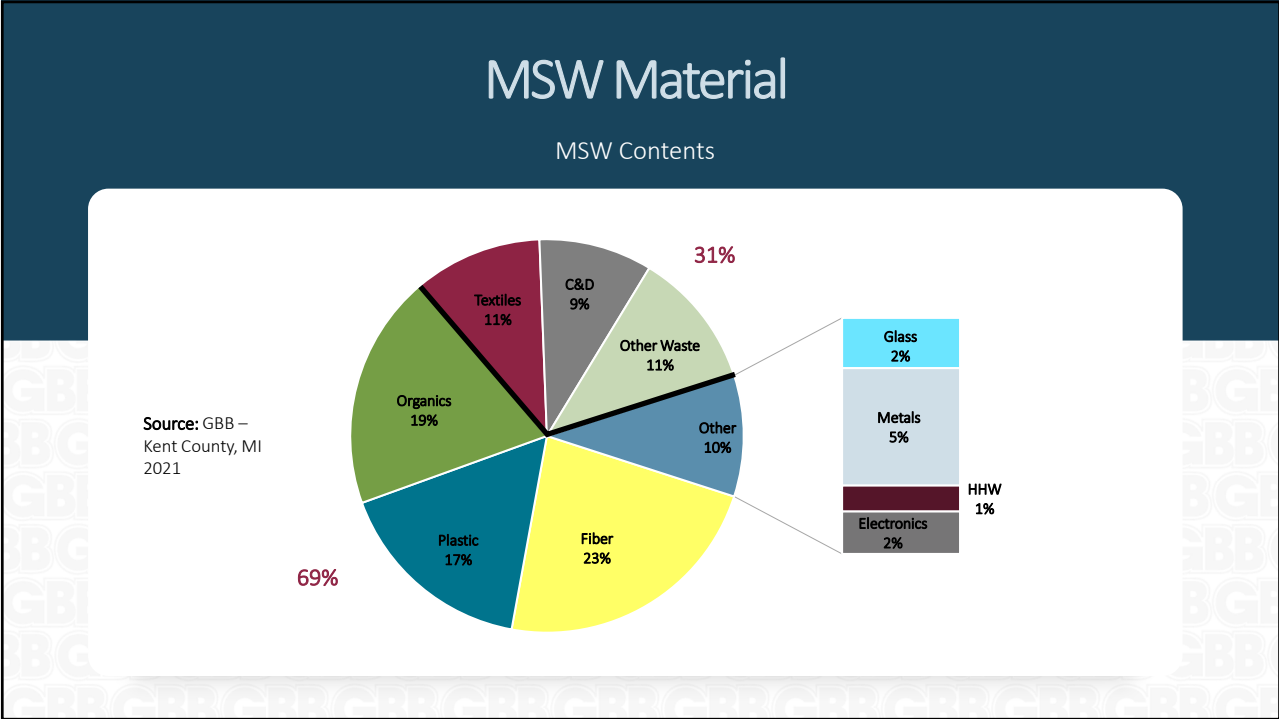
How Much Can Be Diverted

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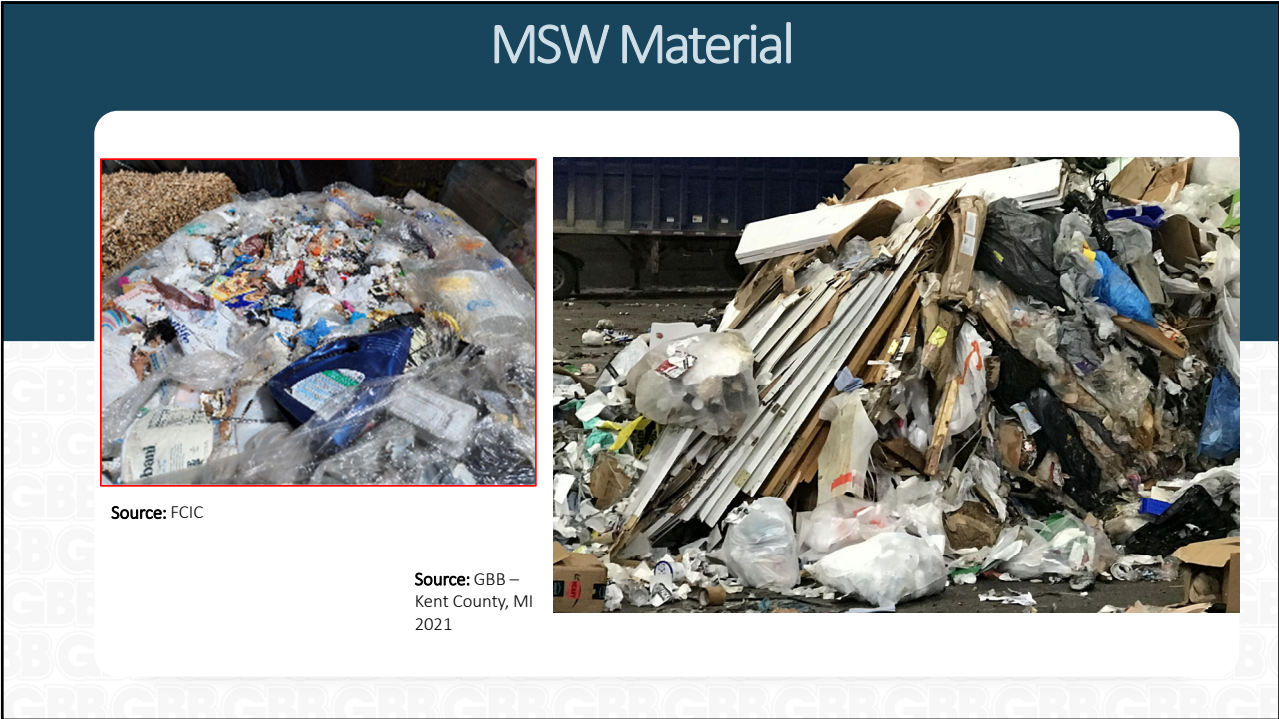


Source: Van Dyk

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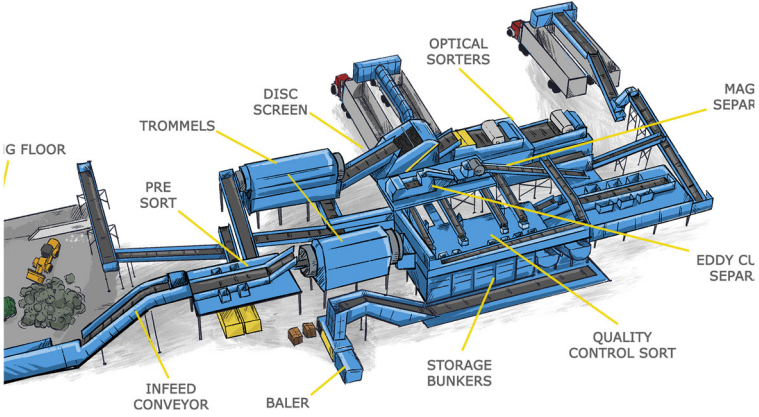
MWPF –  
Utah

**WASATCH**  
**INTEGRATED**  
waste management district


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### Modern MWP Process

- Web videos posted to website (Construction, operations, etc.)
- Tours / Virtual Tours to Students / Education Center
- [www.wasatchintegrated.org](http://www.wasatchintegrated.org)




*Stylized System Layout*



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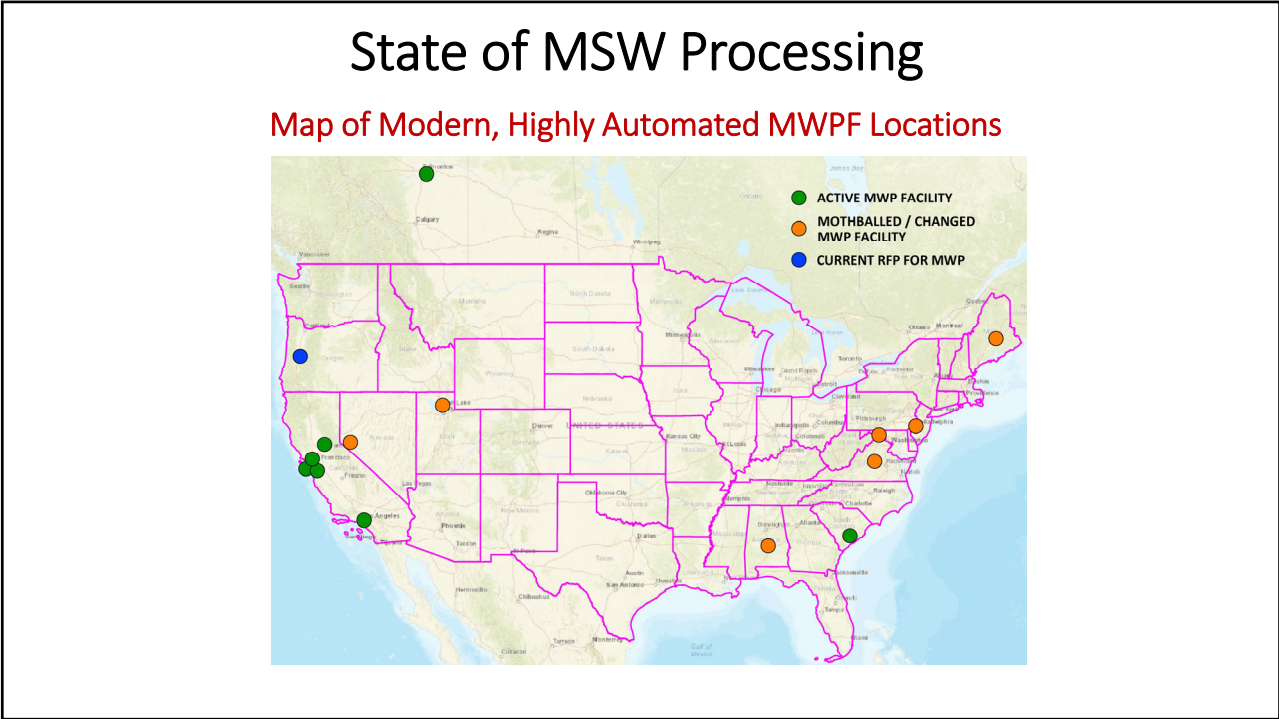
90 TPH  
50%+  
Diversion

## Full MSW Processing Systems



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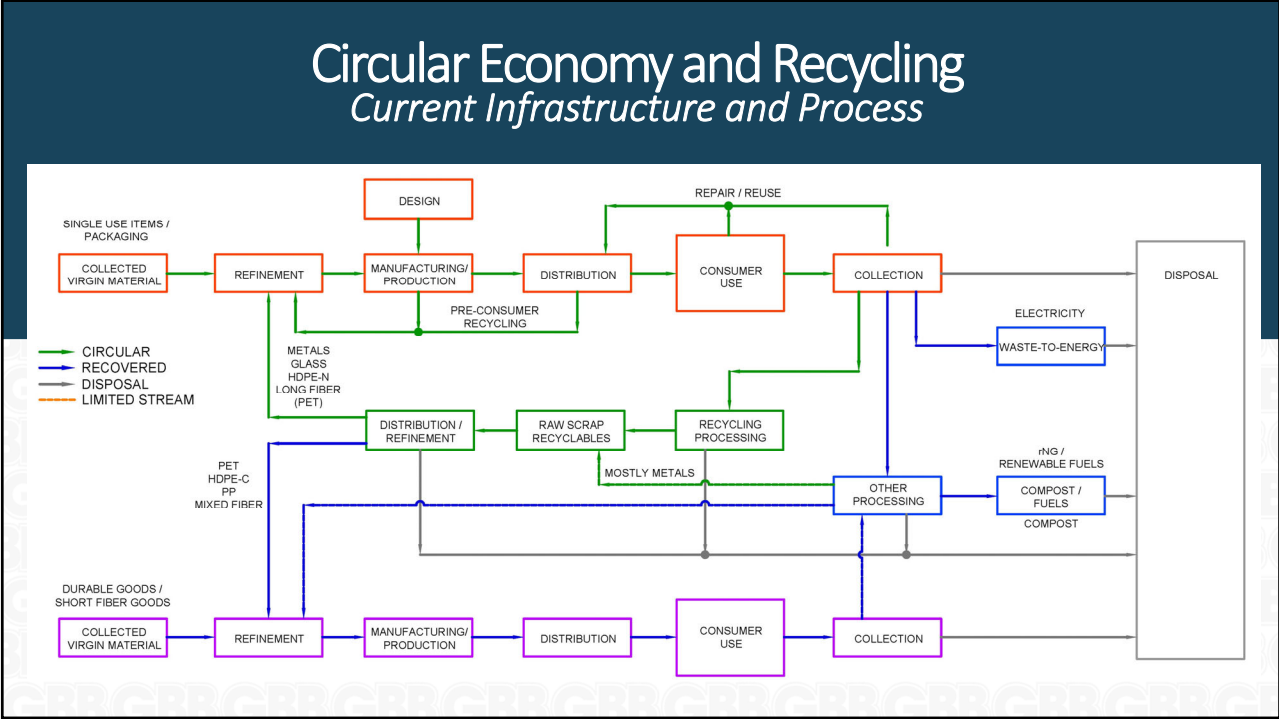
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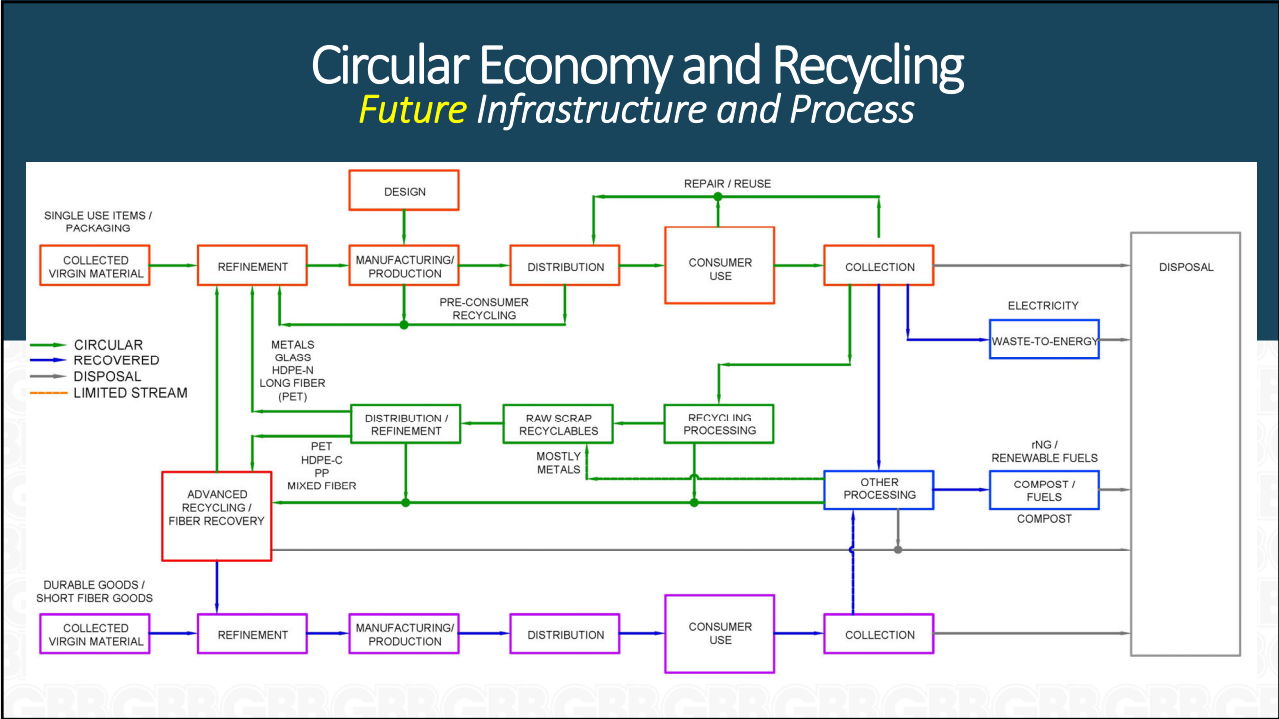
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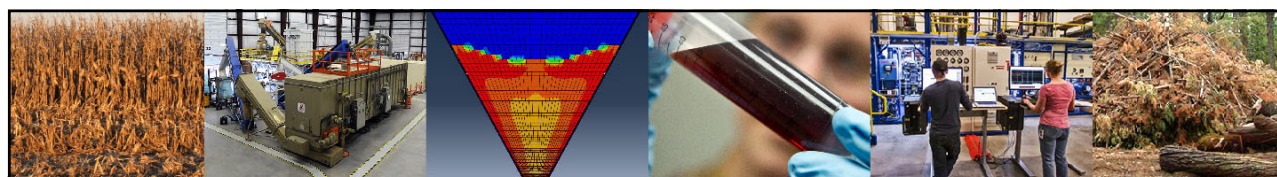


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## Feedstock-Conversion Interface Consortium (FCIC)

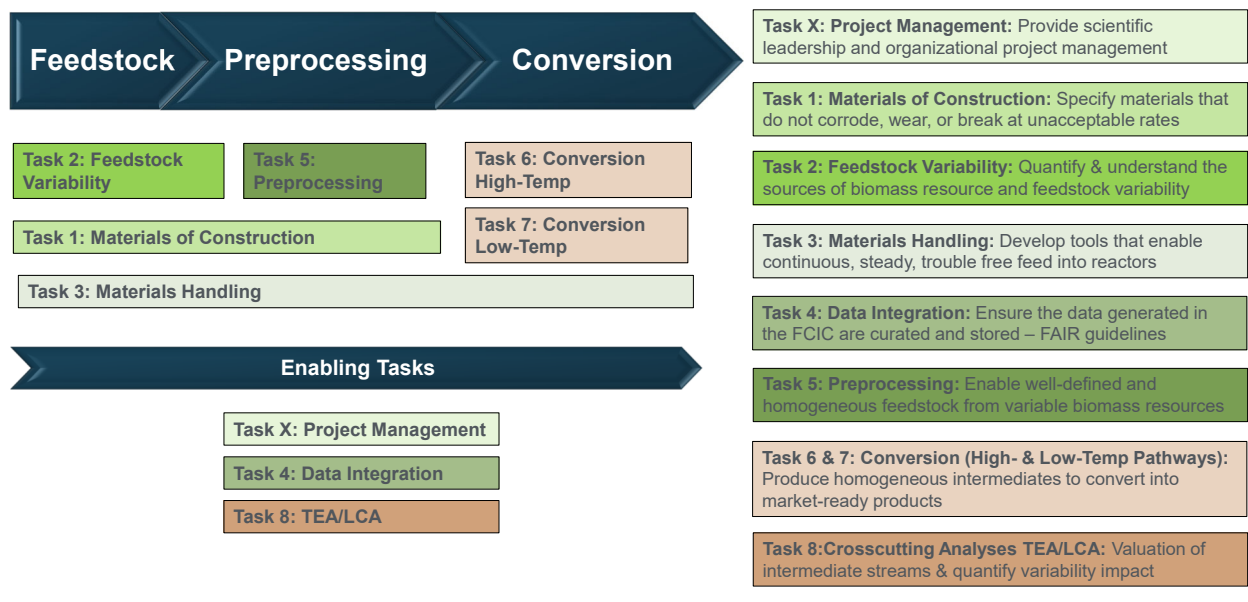
Bioenergy Technologies Office (BETO)

Edward J. Wolfrum, Ph.D.  
Principal Investigator



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## FCIC Task Organization



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## Wet – Dry Collections

- Dry Packaging and Wet Organics and Packaging (single-use) are collected weekly
  - Dry Fiber and Plastics
  - Dry Metals
  - Wet/Compostable Fiber
  - Organics & Diapers
- Other Residue Collected Monthly
  - Other Recycling Possibilities (Wood, textiles)
  - Can be Processed like C&D
- Produces an Easier to Process Feedstock
- Is Easier for Consumers to Understand
- Collection Costs are not Greatly Increased



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## MSW Collections (Current)

Source: Prince William Co. VA

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 MSW	3	4 Yard	5 MSW RECYCLING	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

• Total # of Pick-Ups = 16

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## MSW Collections (Wet/Dry)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4 WET DRY	5	6	7
8	9	10	11	12	13 GLASS	14
15	16	17	18	19	20	21
22	23	24	25	26	27 OTHER	28

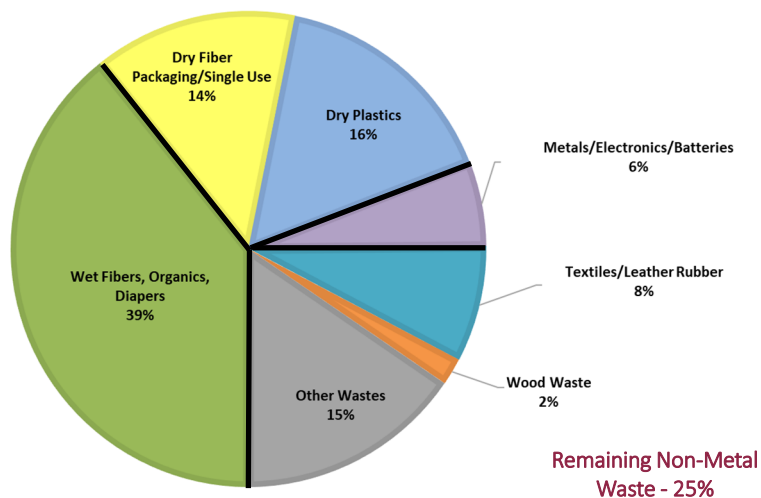
- Total # of Pick-Ups = 10

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## Residential MSW Material

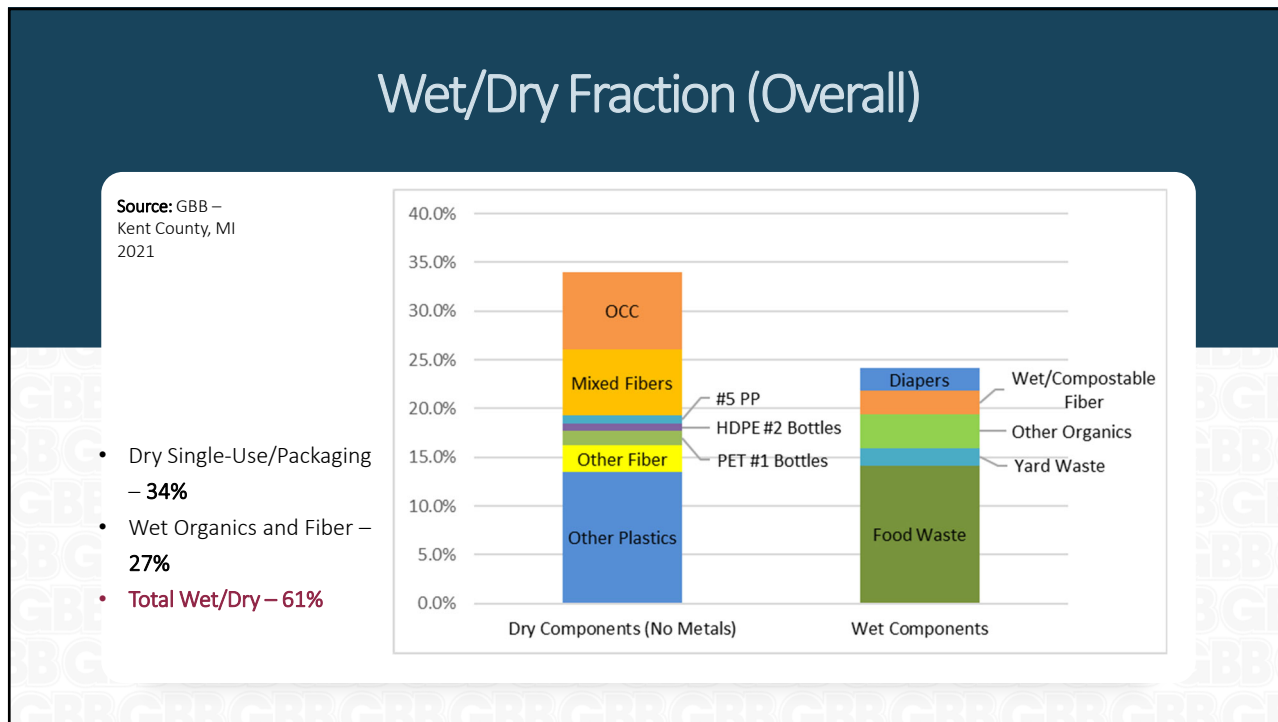
Source: GBB – Kent County, MI 2021

- Dry Single-Use/Packaging – 30%
- Wet Organics and Fiber – 39%
- Total Wet/Dry – 69%



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## Processing Outputs

Potential Streams and Final Products from Wet/Dry Processing

- Mechanical Recycling (Metals, OCC, PET, HDPE, etc..)
- RNG from AD of Organics
- Coal/Biomass Replacement Fuel (RDF/SRF)
- Other Fuel (Aviation, Ethanol, etc)
- Chemical Components for Packaging Reuse
- Other Chemical Materials
- Renewable Building Products



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# Contact Information



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