



Waste EXPO
an event by Waste360

WasteExpo

May 8, 2017
Ernest N. Morial Convention Center (New Orleans, LA)

Lori Scozzafava
GBB – Gershman, Brickner & Bratton, Inc.

In Collaboration with
National Waste & Recycling Association
Waste 360

GBB
SOLID WASTE
MANAGEMENT
CONSULTANTS

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I'm a passionate advocate for environmental issues—including sustainability, waste reduction, recycling, composting and integrated waste management—while being focused on the triple bottom line: people, planet and profits.
Lori Scozzafava, Vice President, Operations Officer

GBB's Waste Consulting Services

- Strategic Planning
- Economic, technical and environmental reviews
- Procurements
- Due diligence third-party reviews
- Waste characterization and sourcing
- Process planning and conceptual designs
- Independent feasibility consultant

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Only Part of the Discussion is the Pros & Cons of the Technology

Pros	Cons
	

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MWWPF Currently Moderate to High Risk

Processing for Recyclables and Fuel	Proven commercial technology	Low
Composting	Proven commercial technology	Low
Mass Burn Combustion	Proven commercial technology	Low
RDF Combustion	Proven technology; limited U.S. commercial experience	Moderate to Low
Anaerobic Digestion	Proven technology; limited U.S. commercial experience	Moderate to Low
Mixed-Waste Processing Composting	Previous large failures; limited large-scale plants in operation; product quality issues	Moderate to High
Pyrolysis and Gasification	Previous failures at scale; no operating experience with large -scale operations in the U.S.; full-scale demonstrations nearing operation	High

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Regardless of option chosen, we still must accept that . . .

- Markets drive the economics
- Collection largest cost of managing solid waste

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Collection Needs to Match Up with Technologies

- One bin – two bin – three bin - four?
- Which shall it be to be greener evermore?

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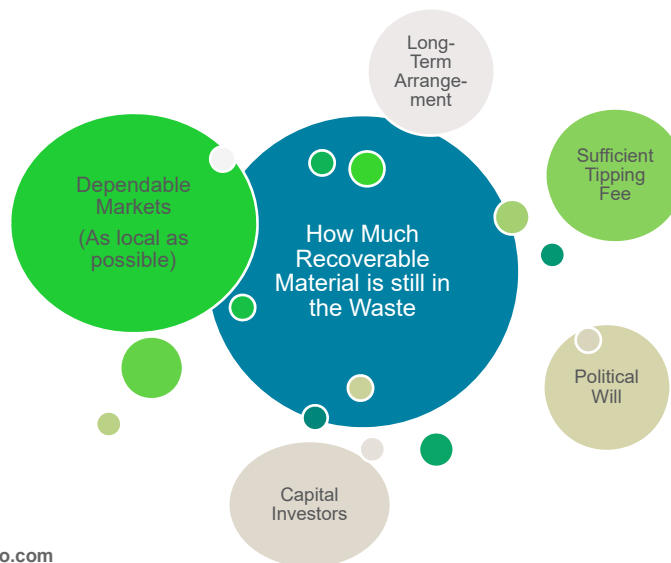
- Decision as to whether to implement MWP should not be determined simply as a processing option.
- Collection costs are a large part of the recycling equation
- Looked at in totality, recovery may improve most with MWP
- But only if markets for products are available
- Commercial vs. Residential could be a big factor

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My Take . . . It's Possible . . .But, the Moon and Stars Need to Align



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Mixed Waste Processing is not New RDF Burning in Coal-Fired Utility Boilers (1970s)

Union Electric Co.
St. Louis, MO
1972, 300 TPD



Americology – WEPCO
Milwaukee, WI
1977, 1200 TPD



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Europe Uses Mixed Waste Processing

- Highest landfill tax rates and a ban too!
>>>\$100 per ton!!
- 1999 EU Landfill Directive
 - Reduce biodegradable waste sent to landfill 65% by 2020
- EU targets to be met by 2020 (the '20-20-20' targets):
 - Greenhouse gas emissions of at least 20 percent below 1990 levels
 - 20 percent of energy consumption from renewables
 - 20 percent reduction in primary energy use by energy efficiency

Country	Landfill Tax
Austria	€ 87
Belgium	€60-€80
Denmark	€ 63
Finland	€ 40
France	€ 70
Germany	Ban
Ireland	€ 50
Netherlands	€ 107
Norway	€ 59
Sweden	€ 43
UK	€ 63

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Mixed Waste Processing is not New in US

- Currently
 - 14 MWPF
 - Some early 90's
 - Wasatch Facility, UT 2016
 - 6 Hybrid
 - Monterey, CA
 - Michiana Recycling & Disposal
- Some facilities not on the list
 - Van der Linde, NC
 - Great River, MN
- On my watch list
 - Enstorga, WV



Source: 2016-2017 Materials Recycling and Processing Database



So, What's Different?

Some Single Stream Facilities are Already Like MWPF (Contamination Issues)



Food Waste & Vegetation



Contaminated Material & Food Waste



ONP Screen Jammed w/Plastic Waste



Household Trash, Electronics and Hoses

Source: ReCommunity

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Enhanced Technologies



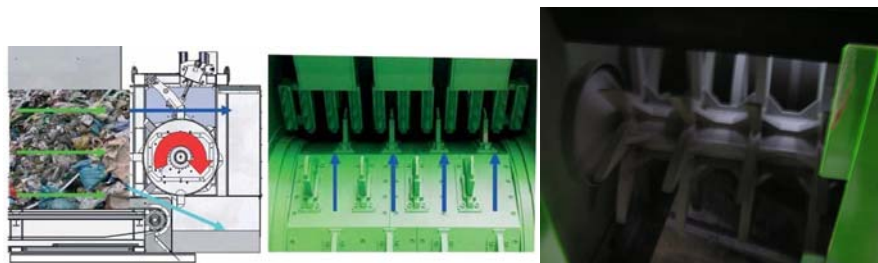
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Bag Breakers

- Open bags but not damage materials
- Offline or Inline
- NOT a shredder!



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Primary Shredder Types

High-Speed Hammermill



Horizontal



Vertical

Source: West Salem Machinery, Schutte Buffalo, SC Environmental

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Trommel Screen



Source: CP Group, www.ecocycle.org
Leftovers Report

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2D/3D Separators

Ballistic Screen



Source: Machinex

Polishing Disc Screen



Source: CP

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Air Classification: Air Drum Separators and Aspirators



Source: BHS, Nihot

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Container Optical Units



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Film and Fiber Optical Units

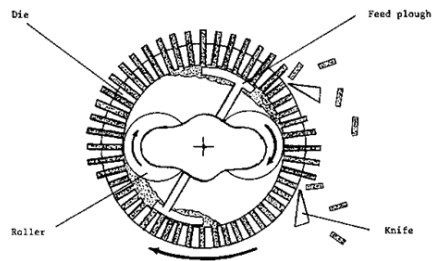


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Pellet Extruders



Source: Warren and Baerg, Food and Ag. Org.

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Engineered Fuel in Cement Kilns



Engineered Fuel (EF) Fluff



Engineered Fuel (EF) extruded pellet

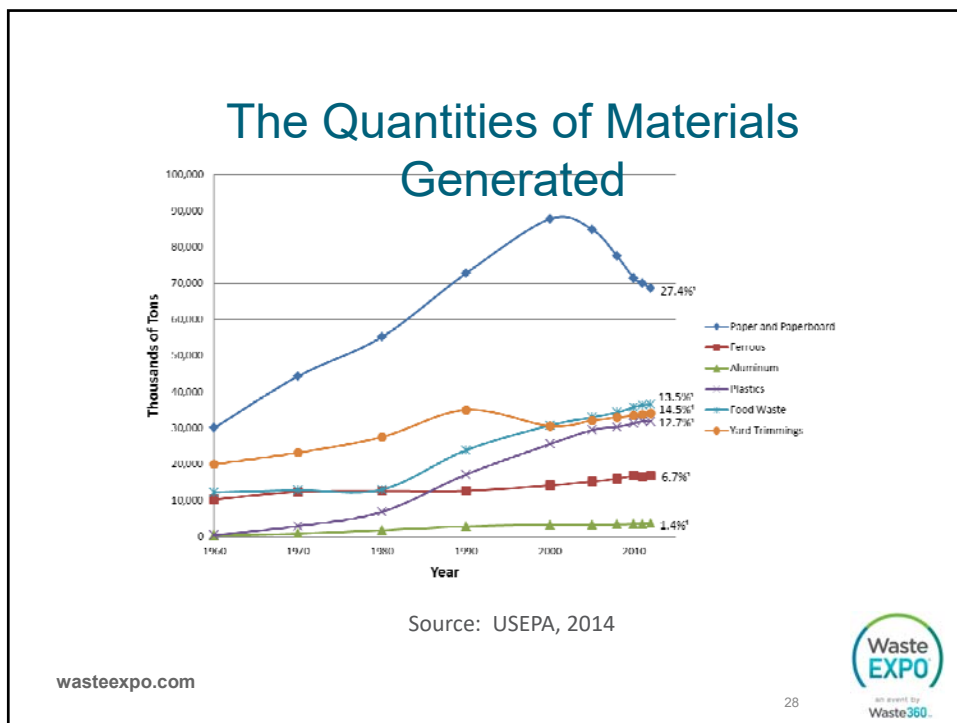
- Huge consumer of fossil fuels
- Closed systems; residue stays in the cement
- 107 cement plants in 36 U.S. states
 - Top five companies collectively operate 49.6 percent of U.S. clinker capacity
- 16 plants in Canada
 - Eight companies operate in five provinces and produce over 98% of the cement used in Canada
- Majority of ownership outside of U.S. and Canada

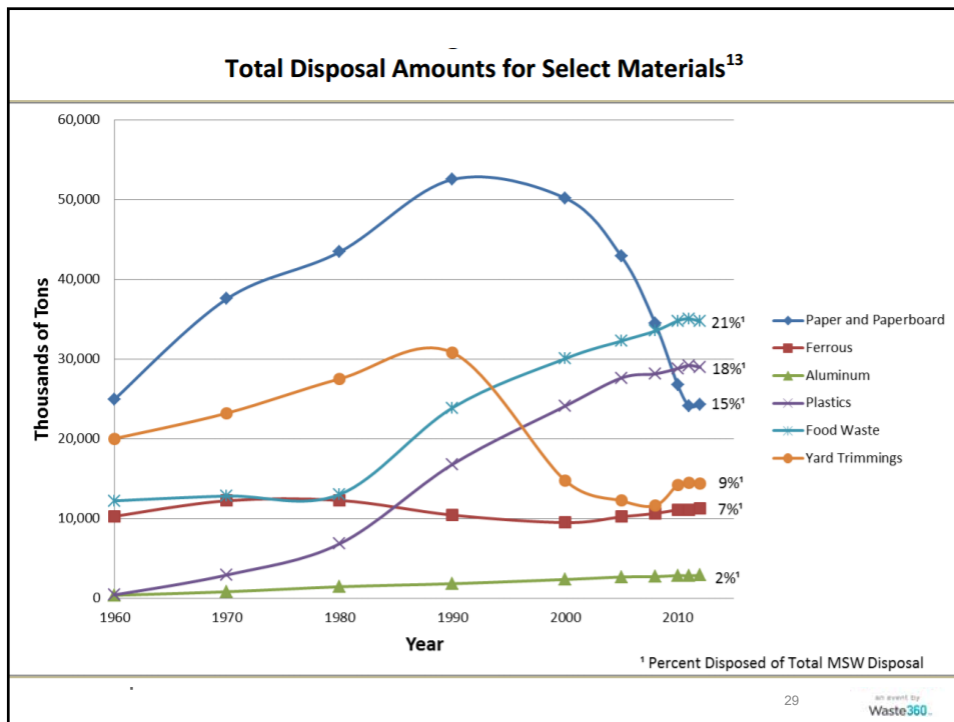
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Markets Have Changed

- More of a Range of Quality (Price Elastic)
- Secondary Processing Industry Growing
 - Plastic
 - Glass



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Mixed Waste Processing Report



**The Evolution of
Mixed Waste
Processing Facilities
1970-Today**

Prepared for:
The American Chemistry Council

Prepared by:
Gershman, Brickner & Bratton, Inc.

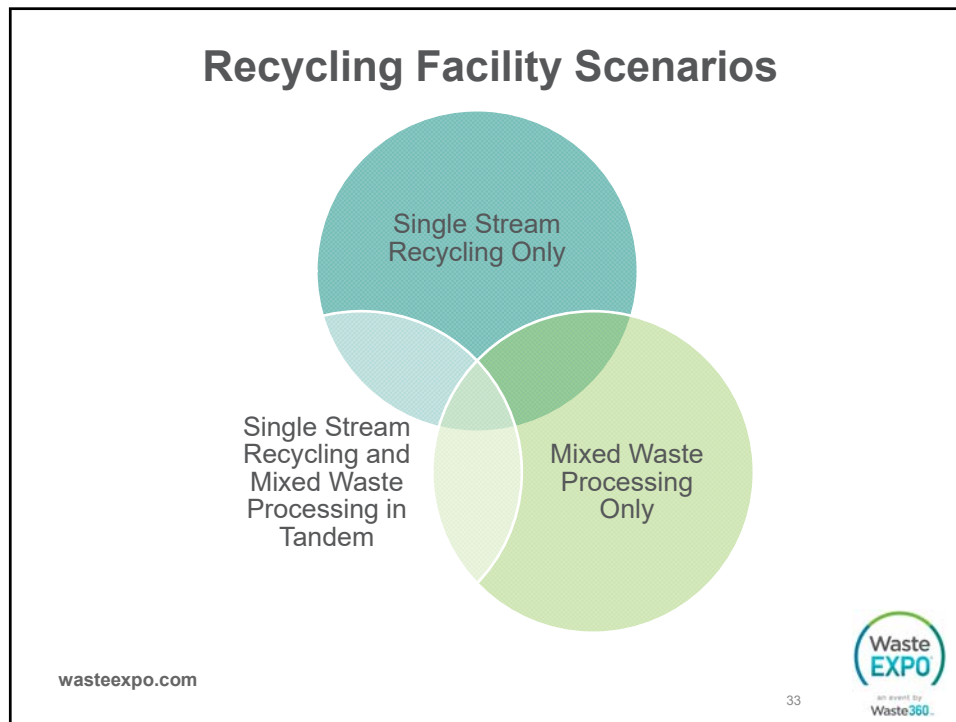
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<http://plastics.americanchemistry.com/Education-Resources/Publications/The-Evolution-of-Mixed-Waste-Processing-Facilities.pdf>



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- ### City of Fort Worth Results
- **Good** – MRF only – 19%
 - **Better** – MWPF only – 25%
 - 46% with additional organics
 - **Best** – Both in tandem – 34%
 - 55% with additional organics
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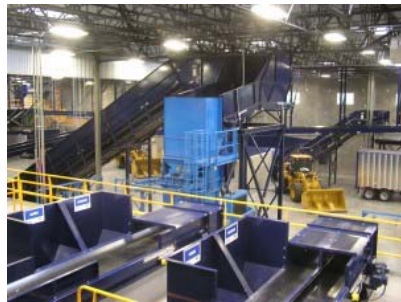
What is the Public Goal?

<p style="text-align: center;">Must Do More Diversion (\$ May Not be the Issue)</p> <div style="background-color: #00728f; color: white; padding: 5px; text-align: center; margin-bottom: 10px;">Zero Waste</div> <div style="background-color: #00728f; color: white; padding: 5px; text-align: center;">Sustainable Goals</div>	<p style="text-align: center;">Would be Good to Divert More (Good Future Planning)</p> <div style="background-color: #00728f; color: white; padding: 5px; text-align: center; margin-bottom: 10px;">Save LF Space</div> <div style="background-color: #00728f; color: white; padding: 5px; text-align: center;">Need the Products</div>	<p style="text-align: center;">Got to Do Something (Culture or Economies of Scale Limiting)</p> <div style="background-color: #00728f; color: white; padding: 5px; text-align: center; margin-bottom: 10px;">Costly Disposal Options</div> <div style="background-color: #00728f; color: white; padding: 5px; text-align: center;">Few Markets, Limited Funds, Little Control - Make Enough Recycling Happen to Hit State Goal (and be able to track it)</div>
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Montgomery, AL - Infinitus

- High-tech 80,000 square feet “state-of-the-art” Mixed Waste Processing Facility
- Capital cost in excess of \$30 million
- First “One Bin for All” in 21st Century in the U.S.
- Main equipment subcontractor, Bulk Handling Systems
 - One-line, 40 ton per hour input for 100,000 tons per year
 - 60 % material recovery guarantee plus other organics separation capabilities
- Commercial operations began April 2014



Source: GBB 2014

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Opinion of Trends for Future

- More mixed waste processing (MBT will come to North America if the trend toward zero waste continues)
 - Added recycling side-benefit
 - Most conversion technologies require pre-processing for feedstock preparation
 - Cement kilns and coal-fired boilers potential RDF users
 - CNG from AD projects and municipal fleet use
- New conversion technology facilities and “One-bin” key to watch

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Thank You



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