

PROP
PROFESSIONAL RECYCLERS
OF PENNSYLVANIA

GBB
SOLID WASTE
MANAGEMENT
CONSULTANTS

Quality – Value – Ethics - Results

Established in 1980

Solid Waste Management and Technology Consultants

Helping Clients Turn Problems into Opportunities

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Economic, technical and environmental reviews

Procurements

Due diligence

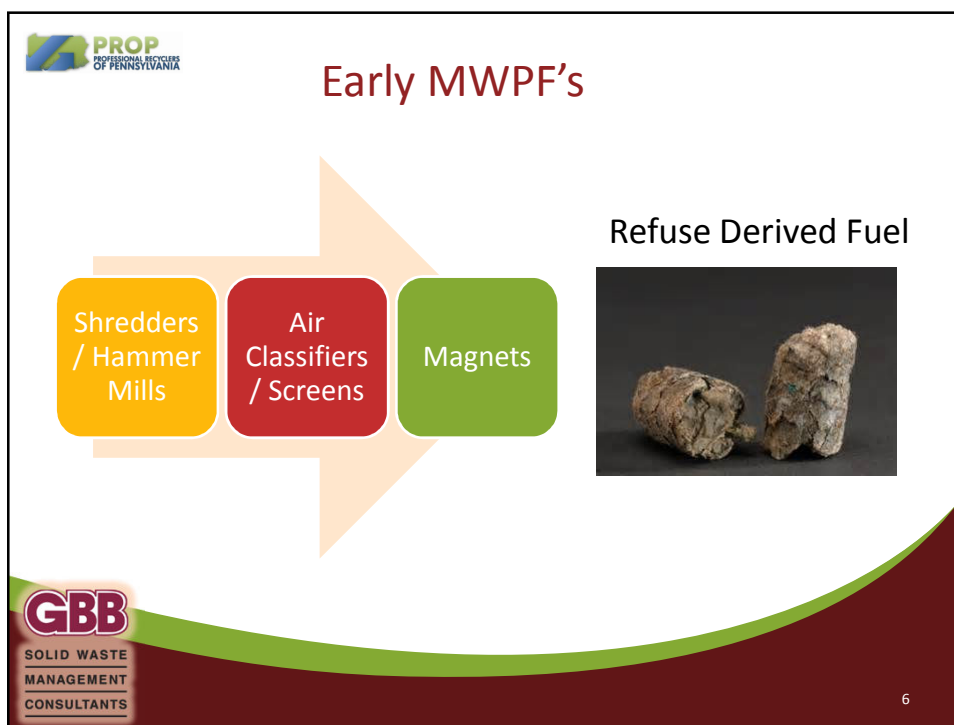
Waste characterization and sourcing

Independent feasibility consultant

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Logos of clients and partners: County of Maui, Guam, Sustainable Portland, United States Environmental Protection Agency, City of Alexandria, a stylized 'P' logo, San Bernardino County, Alamogordo County, Arlington Texas, and Fort Worth.

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Early MWPF to RDF/Dedicated Boilers



Rochester, MA (SEMASS)



Hartford, CT (CRRA)



West Palm Beach, FL



La Crosse, WI (NSP)

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RRS | HISTORICAL ECONOMIC RISKS MWPF

PROCESSING

1. Few operating as intended
2. Quality and quantity of recyclables- resultant available revenue offset
3. Human Factor Sorting MSW
4. Overstatement of recovery potential
5. Attempts to control wastes
6. Cheaper options
7. MRF/Landfill/Market watchdogs aligned against full MWPFs


RIP

Medina, OH
Chicago Blue Bag (3)
Sumter County
San Marcos (San Diego County)
Chambers
Monmouth County
CVT 1, Anaheim
Portland Trans
Garden Grove
Reuters (4) Roscoe,
Illinois Newby 1
Guelph
BFI Dusty MRFs (6)
Fayetteville, NC
Portsmouth, VA

RIP Slide from: Michael Timpane Presentation at the NERC Conference in Wilmington, DE on April 8, 2015


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US Infrastructure

Technology	Number
Source Separation Collections	9,000
Material Recovery Facilities (MRF)	736
Composting	2,300
Mixed Waste Processing Facilities (MWPF)	51
Mass Burn WTE	65
Modular WTE	9
RDF -Processing &/ or Combustion	20
Anaerobic Digestion	19
Transfer Stations	3,350
Landfills	1,908



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WHY MIXED WASTE PROCESSING NOW?



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The Washington Post

washingtonpost.com Sunday, June 21, 2015

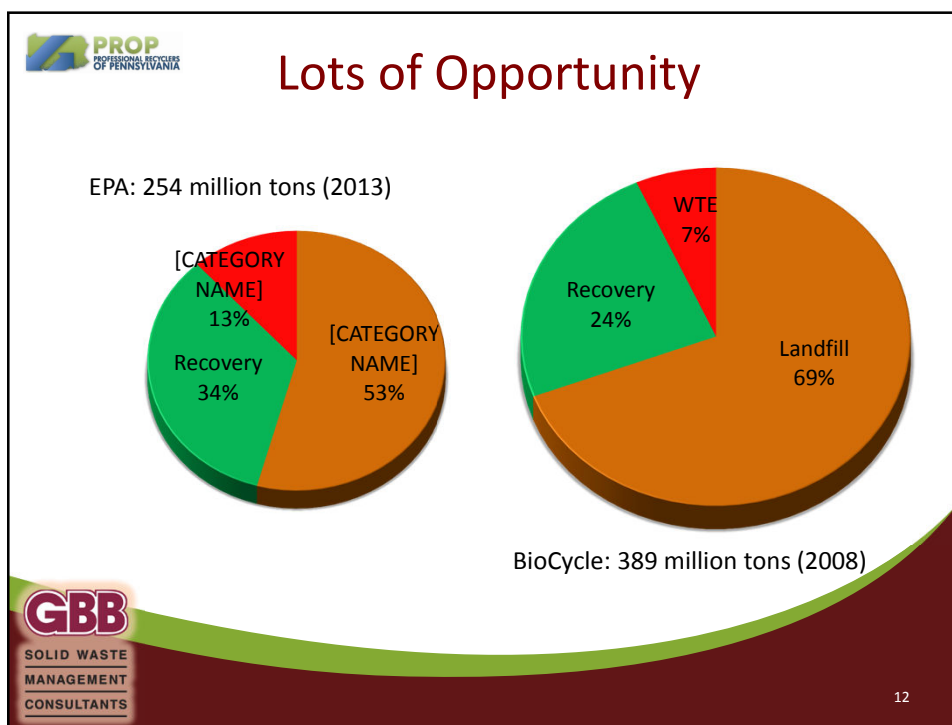
American recycling is stalling, and the Big blue bin is one reason why

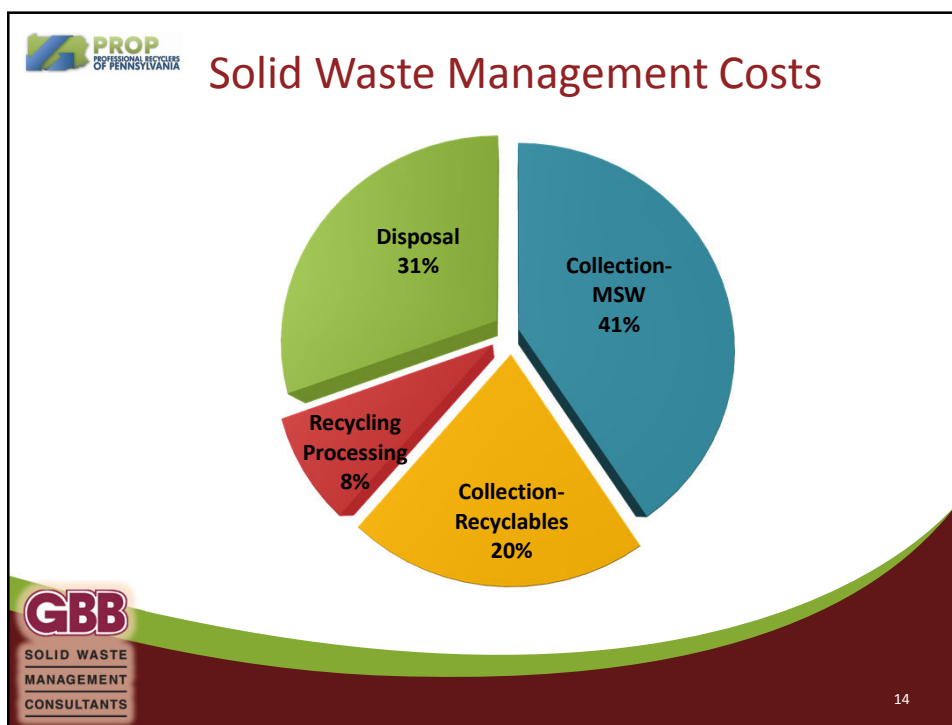
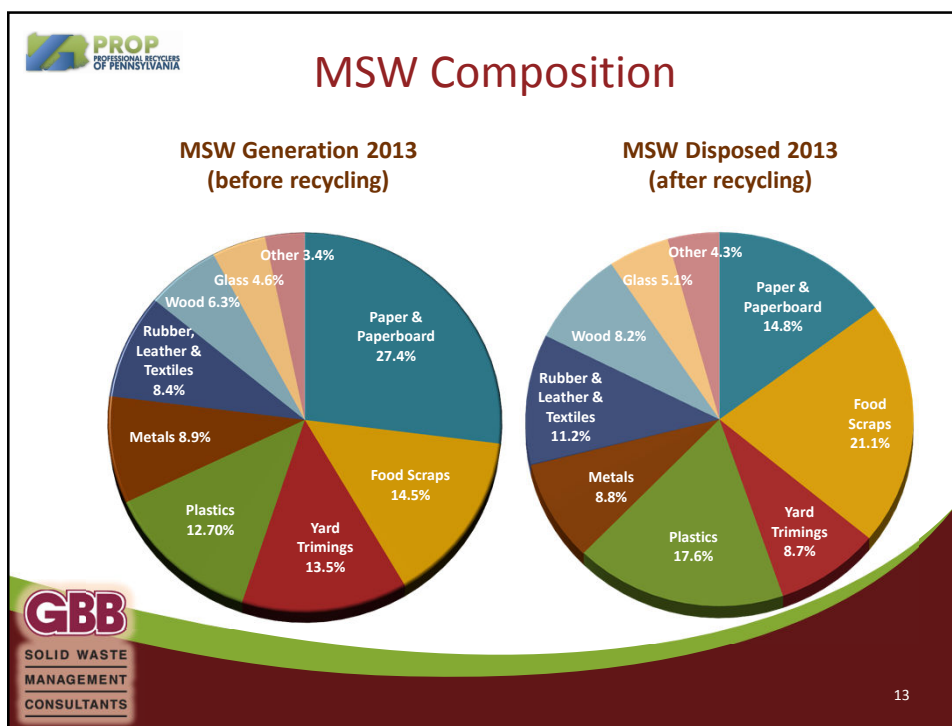



By: Aaron C. Davis

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Increased Interest in Renewable Energy from Waste Technologies


>579 Technology and/or Project Development Companies Worldwide

150 Commercial or Demonstration Facilities with MSW Worldwide


- 67 Anaerobic Digestion
- 48 Gasification
- 19 Plasma Gasification
- 16 Pyrolysis

Contributing factors:

- Renewable energy policy
- Greater revenue potential
- Funding (grants/loans)
- Local governments desire to be greener
- GHG considerations
- Landfill waste diversion goals
- Local jobs
- Increasing collection/disposal fees



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Energy/Fuel Product Values Are Key

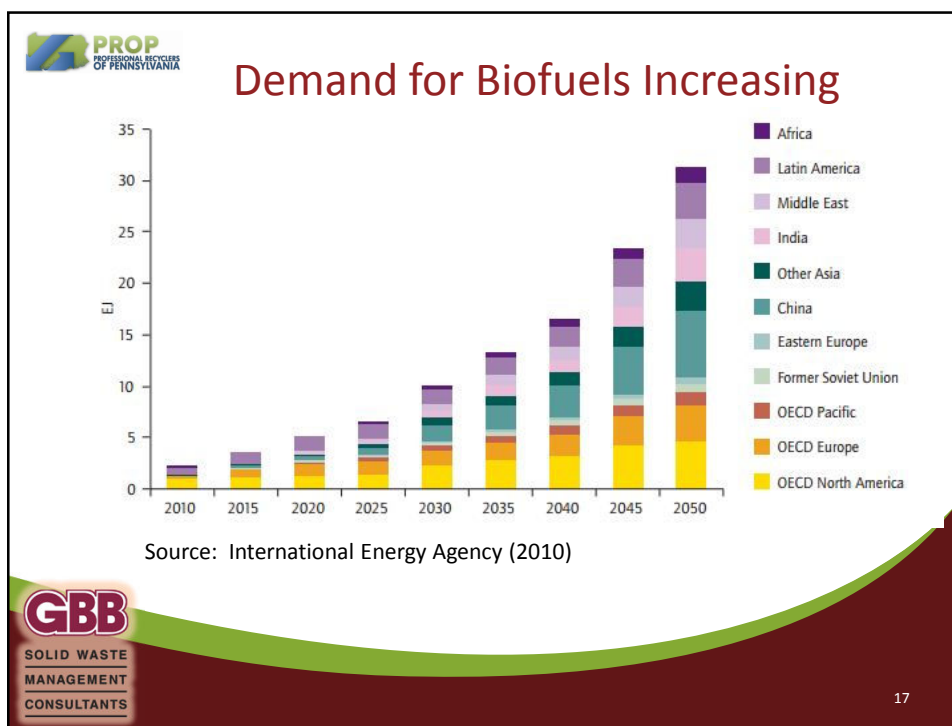
Converting MSW to...	Product	1 ton MSW net yield	Value Per Production Unit	Revenue Per Ton
Converting MSW to...	Power	500-600 kWh	@ \$0.06 / kWh	\$30-\$36
	Synthetic Crude	1 barrel	@ \$80 / barrel	\$80.00
	Ethanol	80 gallons	@ \$2.50 / gallon	\$200.00

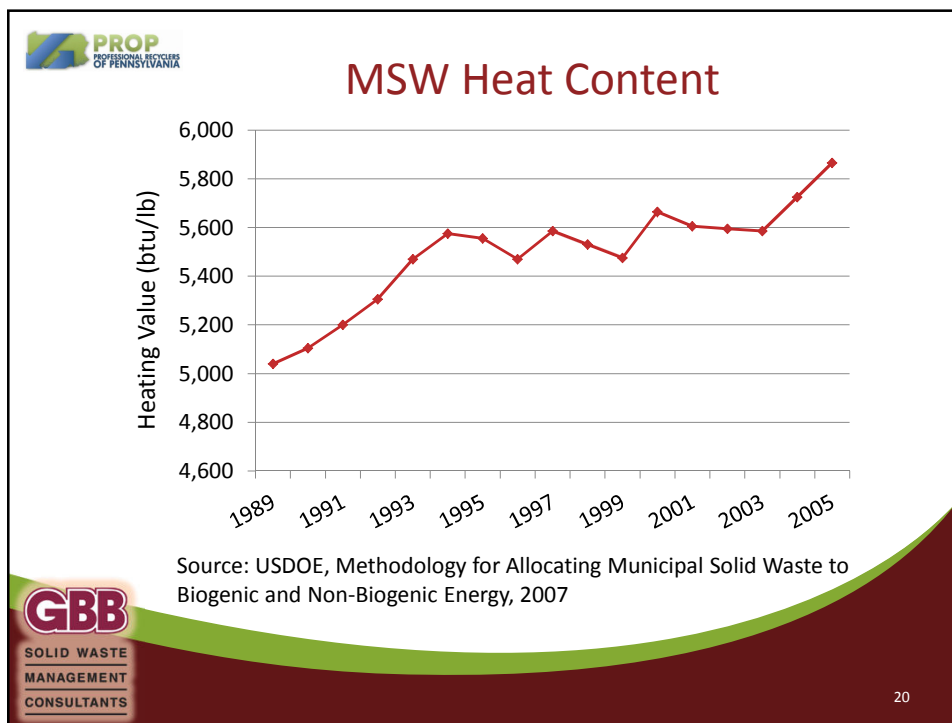
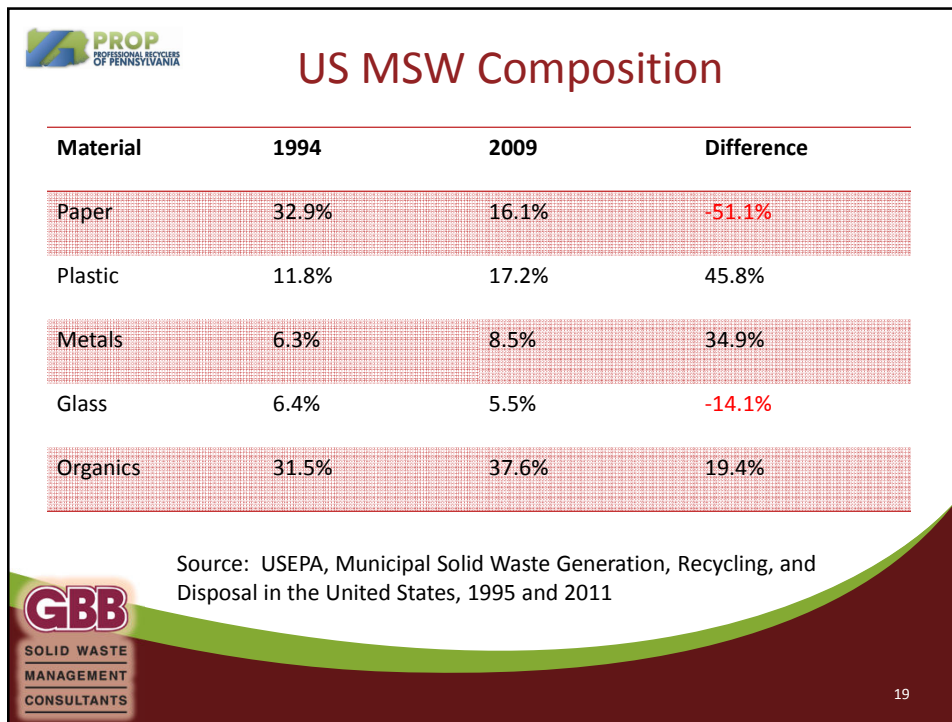
++ sale of chemical feedstocks, heat and/or recovered metals

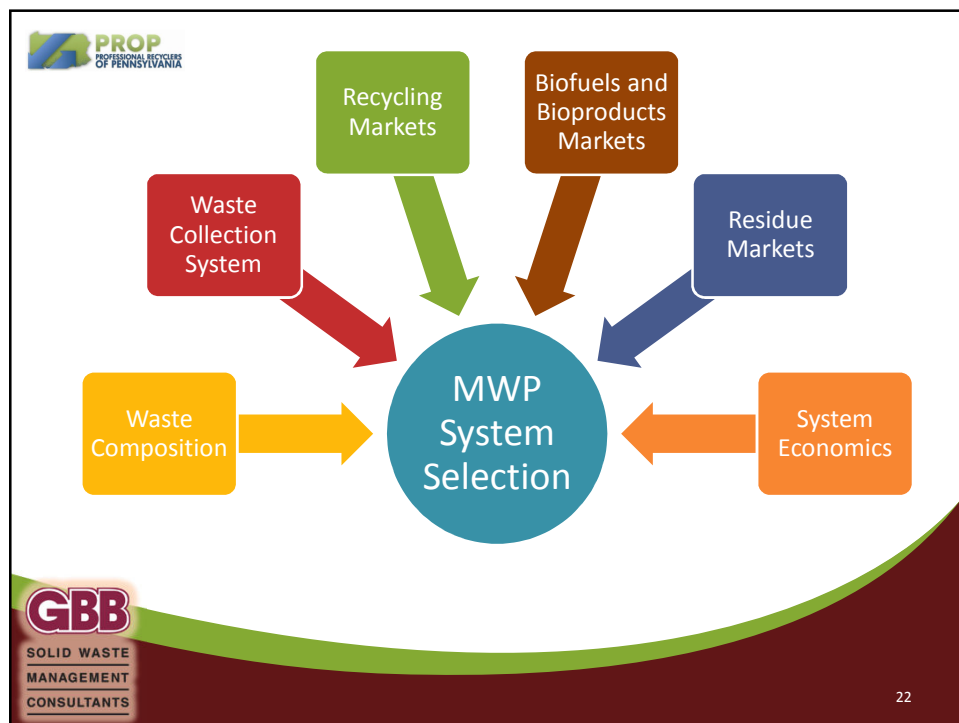
but, System Capital Costs and O&M Costs impact the NET MSW costs

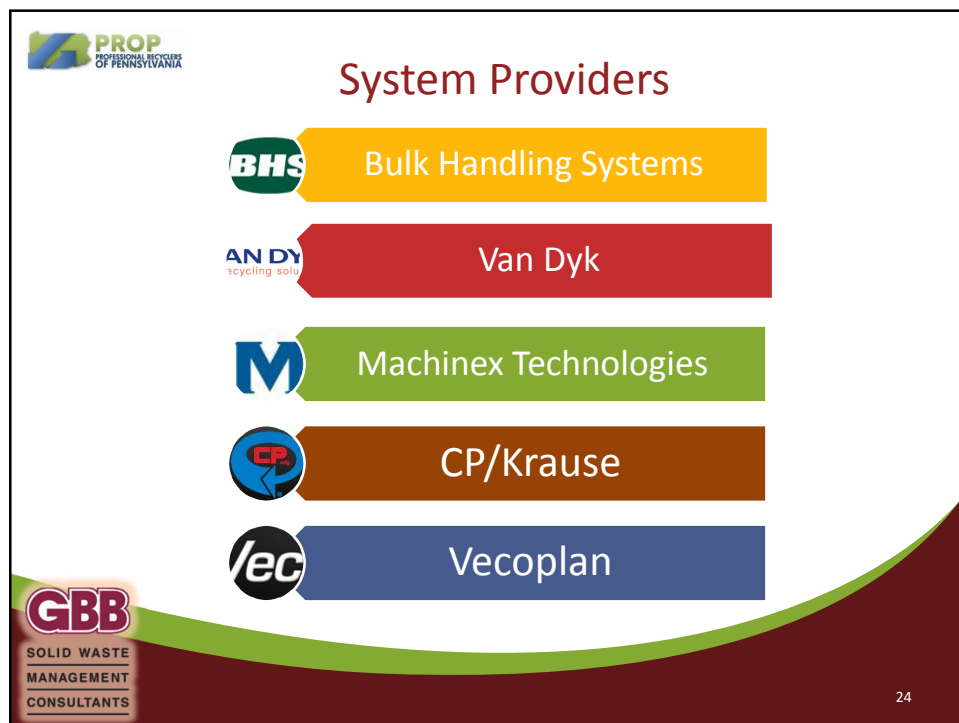
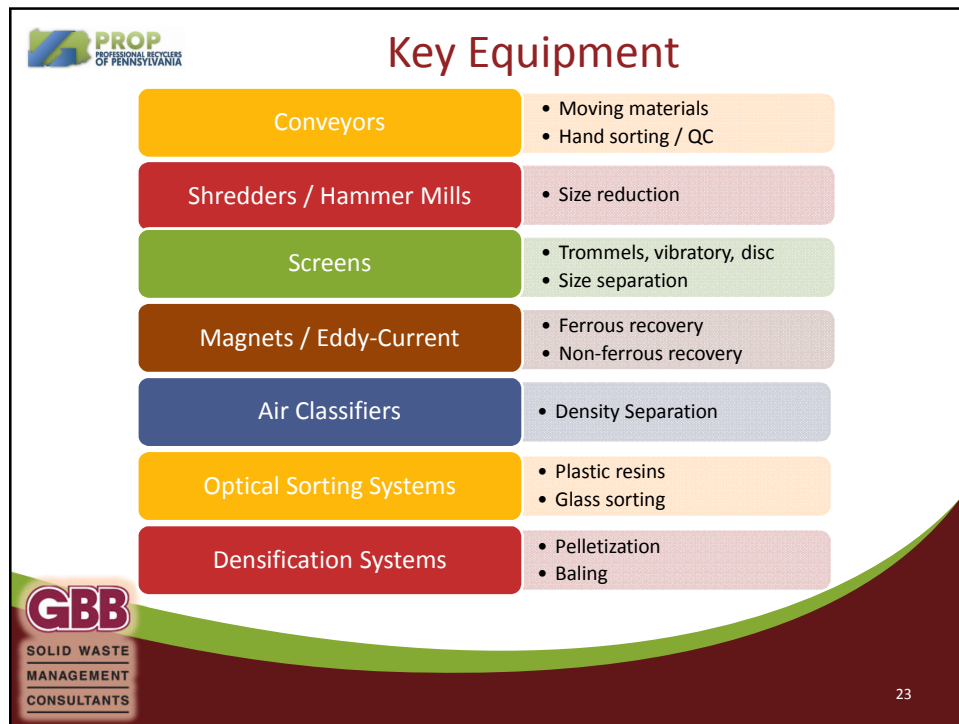



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Modern MWP Facilities

Location	Owner	Start-up Year
Region of York, Ontario, Canada	Lakeside/Borealis Infrastructure (Dongara)	2009
San Antonio, TX	Waste Management	2012
Philadelphia, PA	Waste Management	2014
Edmonton, Alberta, Canada	City of Edmonton	2014
Montgomery, AL	Infinitus	2014

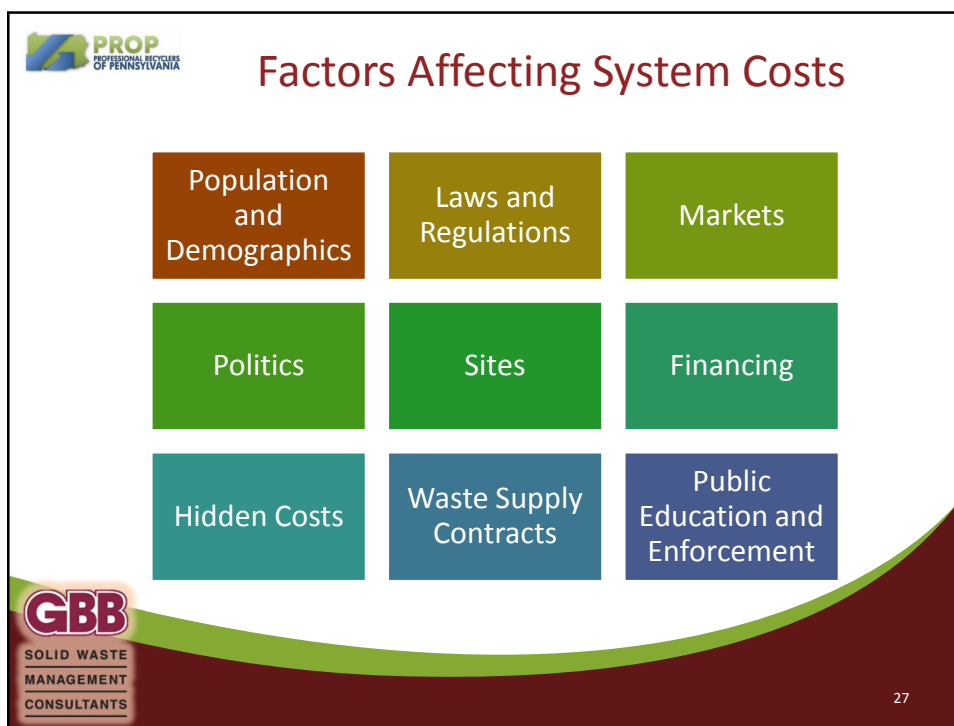

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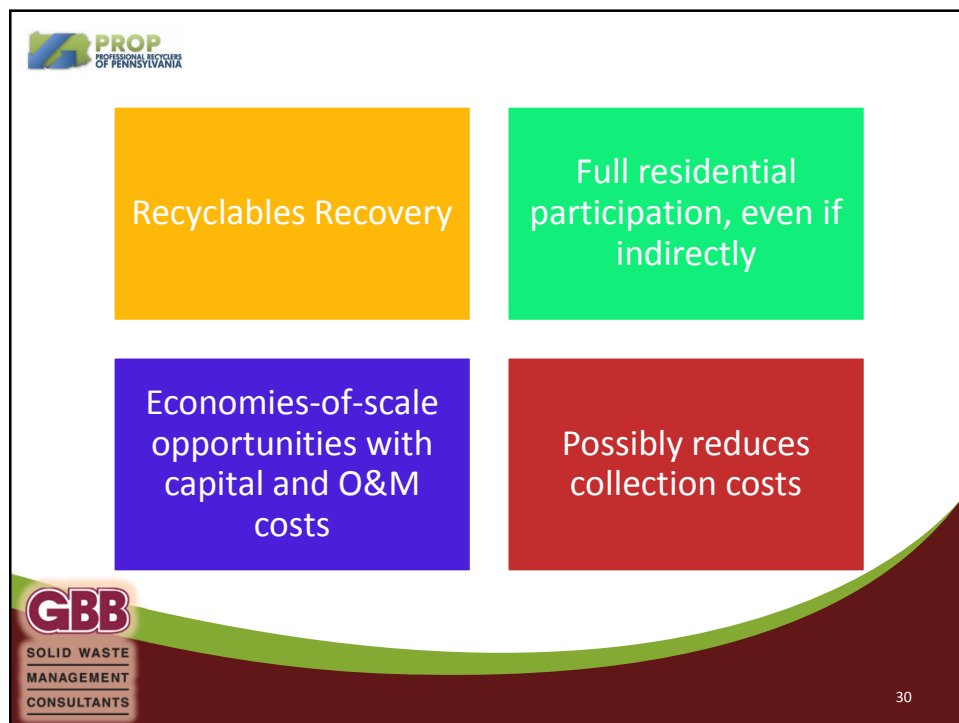



Potentially Recoverable Materials

Large Rigid Plastics	Wood	Large Film Plastics	Bulky Scrap Metals
Ferrous Metals	Aluminum Beverage Containers (non-ferrous)	Large Cardboard	Mixed Paper
Film Plastic	PET (#1) Containers	HDPE Natural (#2) Containers	HDPE Color (#2) Containers
Mixed Plastic (#3 - #7) Containers	Organic Rich Materials for AD or Composting Systems	RDF Feedstock for combustion or gasification systems	Residue


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WASTE&RECYCLING
NEWS

Guest column: Houston's One Bin: It's no 'dirty MRF'

May 16, 2013
By Laura Spanjian, Houston's sustainability director

WASTE&RECYCLING
NEWS


Guest column: Houston's One Bin: It's a dirty MRF

May 30, 2013
By Tyson Sowell | Texas Campaign for the Environment

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NEWS

Guest Column: Call it a 'dirty MRF' or not, a single-bin system can work

July 2, 2013
By Brian Wells | Bulk Handling Systems



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Thank you!



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