

Where is “Mrfing” Going? New York State and Beyond

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Eileen Berenyi, PhD

Governmental Advisory Associates, Inc.
Westport, CT



Materials Recycling Facility Survey

- Since 1990, firm has been surveying recycling facilities in the United States.
- Results published as ***Materials Recycling and Processing in the United States: Yearbook, Database and Directory.***
- The new edition will be published in 2016.
- Information obtained from variety of sources, including telephone contacts, annual reports, budgets, etc.

Immediate Trends

- Markets, markets, markets
- While markets prices have declined, level of technology has gone up.
- Challenging environment for all types of facilities, “mom and pops”, regional facilities and those owned by national firms.
- MRFs are reducing or eliminating pay outs for materials, increasing process fees, putting pressure on their public sector customers.

Developments in MRFs in United States

- Single Stream collection has spread across the country. It is the predominant form of curbside collection.
- What does this mean?
 - Facilities are trending larger. Small facilities are giving way to regional projects.
 - MRFs are taking a broader range of materials
 - Residue rates are on the rise. Single stream averaging in the 17 to 20% range.
 - More facilities than in past years are relying on mechanized and optical type sorting equipment with increased capital costs and demand for throughput.
- Privatization is the “name of the game” with respect to MRFs.
- There have been closures and consolidations of facilities.

Figure 1: Number of Operating Multi-Material MRFs in the United States

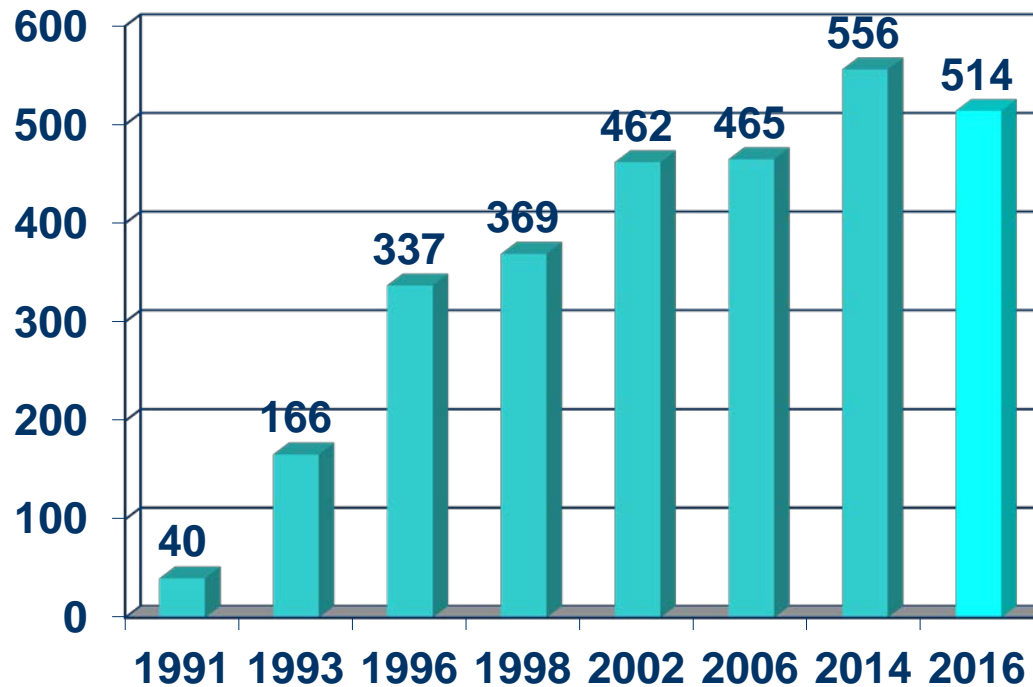
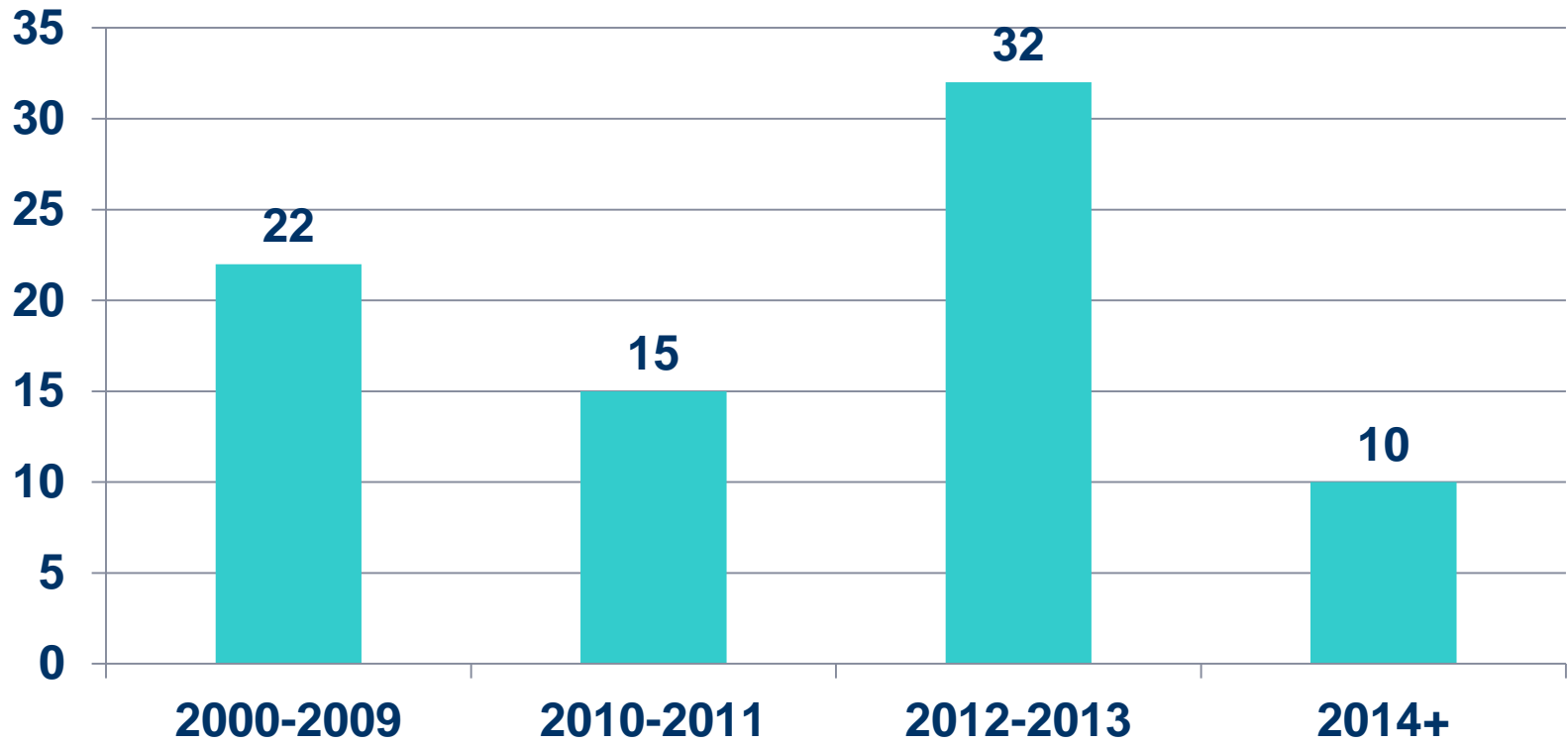


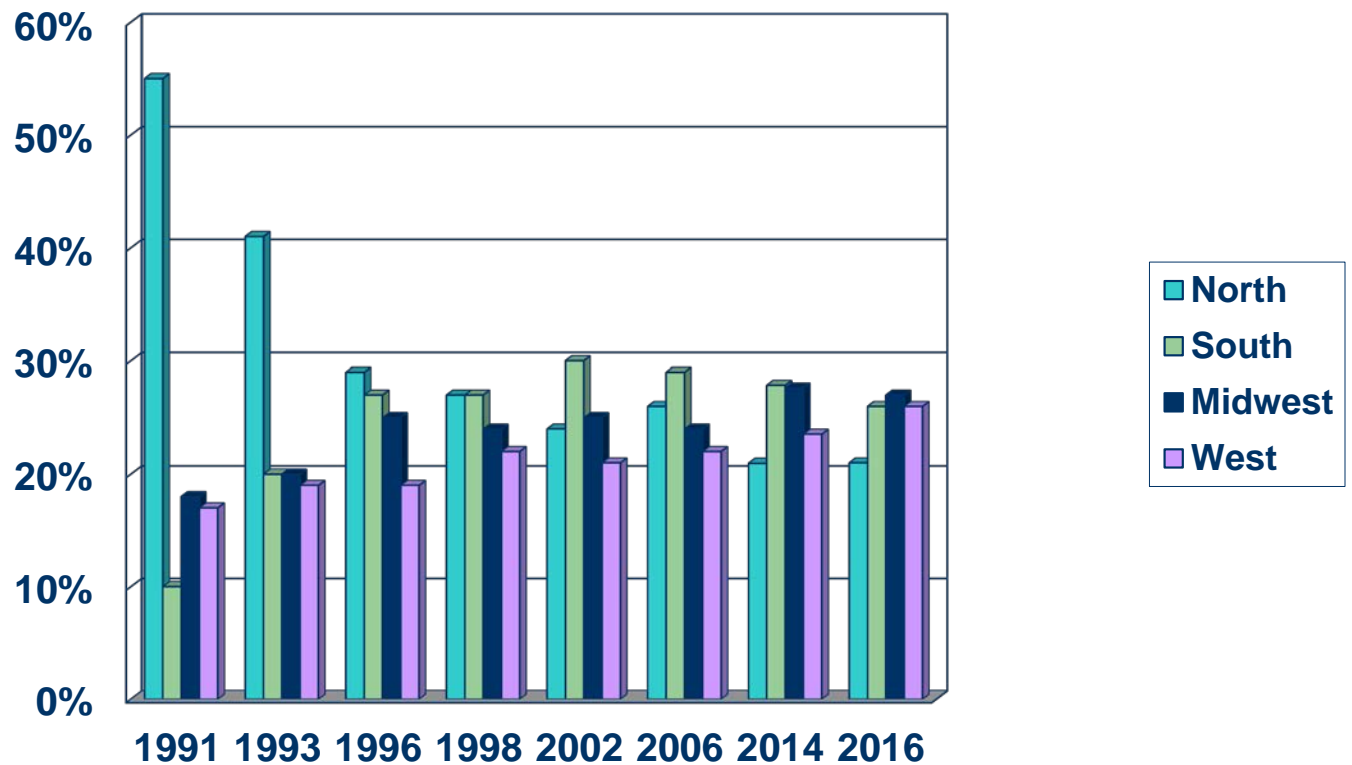
Figure 2: Number of Shutdowns by Year



Regional Distribution of MRFs

- In the early 1990s, the Northeast had the largest percentage of operating MRFs.
- Municipal recycling is now a national phenomenon. No region dominates. MRFs are a permanent part of the solid waste management infrastructure.
- MRFs are found in every region due to:
 - Federal, state and local policies and incentives
 - Development of markets for secondary materials, both export and domestic
 - Drive of many communities to divert waste from landfills

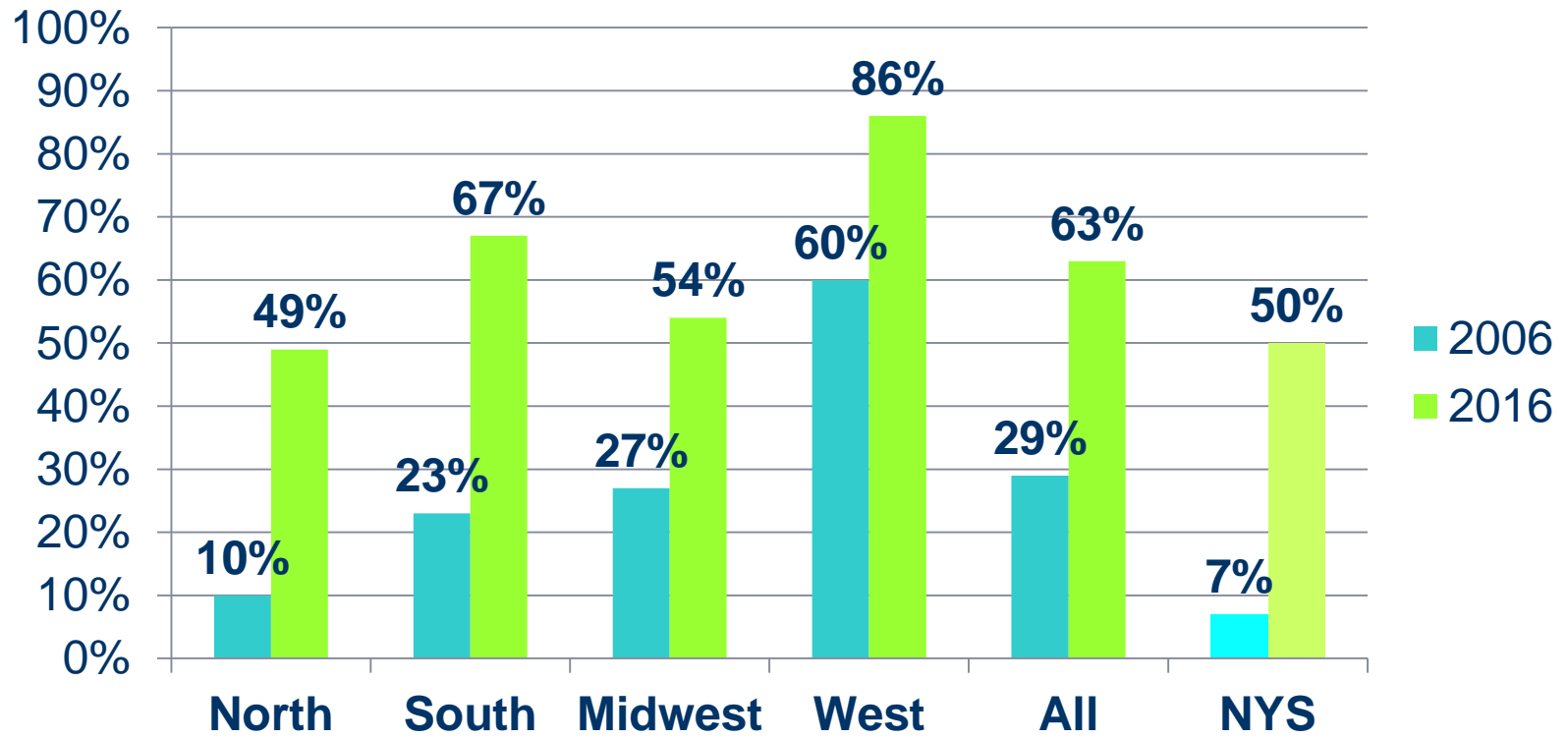
Figure 3: Distribution of Facilities by Region Over Time



Increase in Single Stream Curbside Collection Systems

- Single stream collection is where residents place all their recyclables, fiber and MGP, in a single container, which is picked up at the curb for processing. Residents do not have to separate their recyclables into different containers.
- This system reduces collection costs and tends to increase participation and tonnages of recyclables at the MRF. Increase in tonnage collected range from 10% to 35% with the implementation of single stream.
- Single stream implementation has driven the development of larger, more capital intensive MRFs.
- There is increasing regional dispersion of these single stream collection programs.

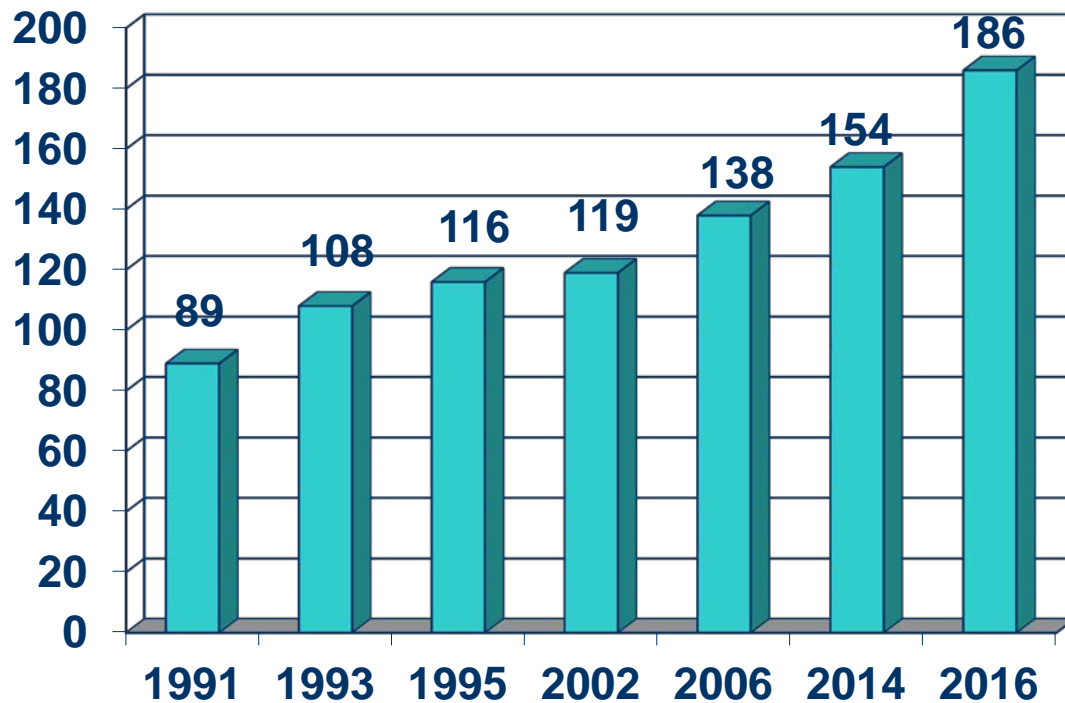
Figure 4: Single Stream MRFs as Percent of Total MRFs By Region



Size of Projects- Daily Throughput

- On average, daily throughput at MRFs has increased.
- The average size of a MRF is now at about 186 tons per day.
- This average has been growing steadily over the last decade, as plants have made the switch to single stream processing.
- 50% of all multi-material plants are handling throughput of above 120 tons per day.

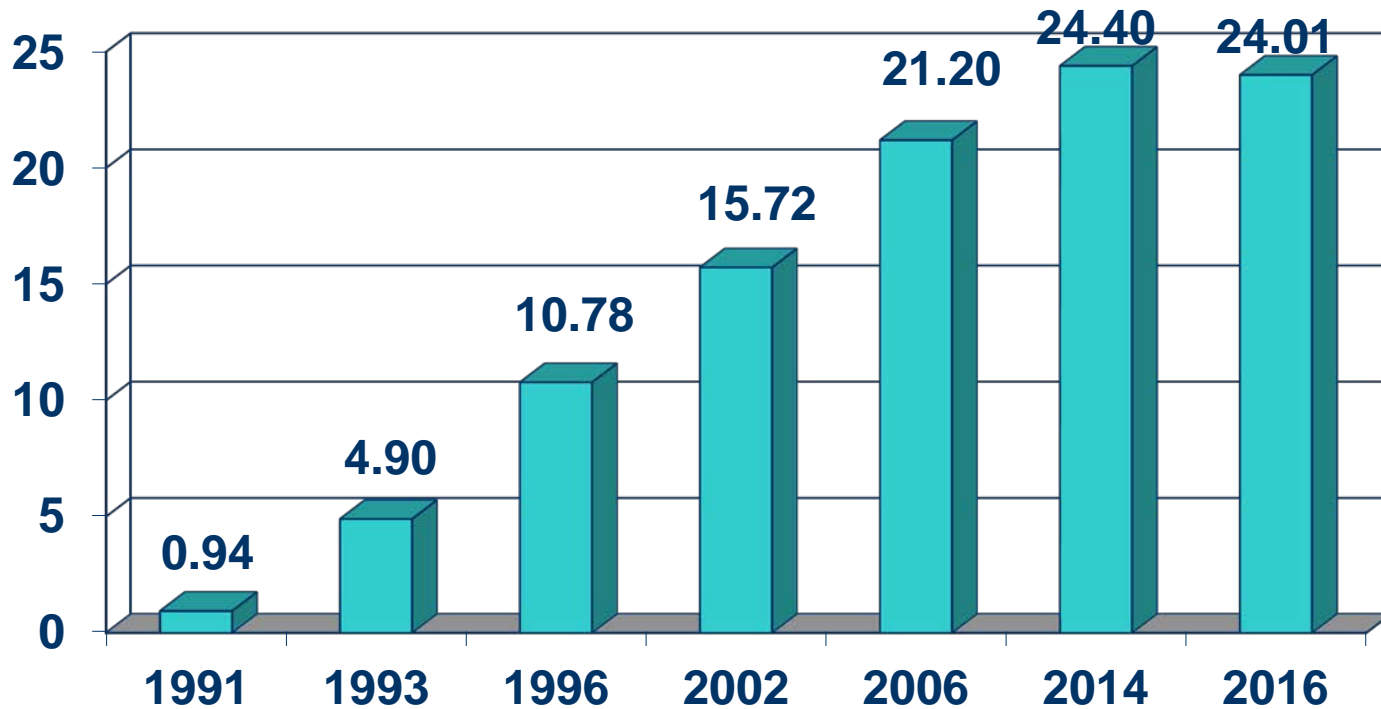
Figure 5: Size of Operating Facilities- Average Tons Per Day Throughput



Size of Projects – Annual Throughput

- There are increasing throughputs of recyclables processed at MRFs. Facilities are getting larger.
- The increase is a function of the growth of capacity and broader types of material being recycled.
- Much of the residential tonnage growth is coming from the switch to single stream.
- Growth is also the result of increased commercial recycling, particularly in urban areas.

Figure 6: Annual Throughput in Millions of Tons



Growth in Use of Optical Sorting Systems

- Through 2002-there were 6 facilities that had one or more optical sorters. These were mainly for fiber and glass
- As of 2014, at least 174 facilities or about 37% of operating MRFs have installed optical sorting systems.
- Most of the optical sorters are being used for plastics.
- The average throughput at these facilities is 320 tpd.

Optical Sorters Used For...

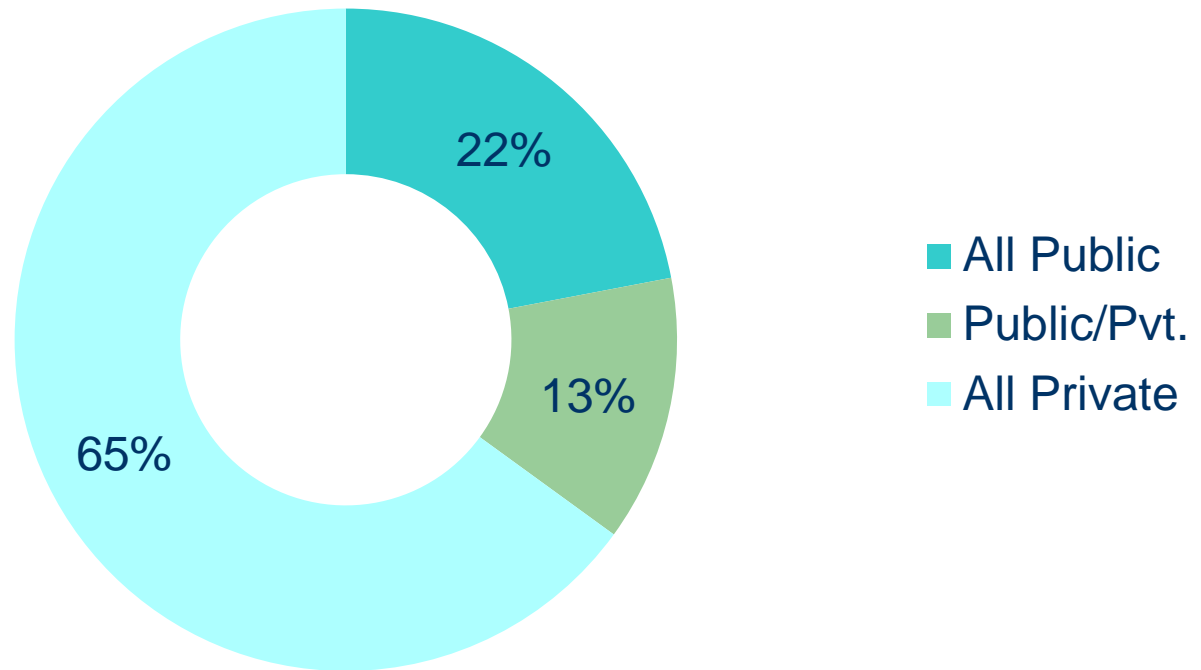
- Most MRFs use optical sorters for plastics. More than 70% of sorters used for 1 & 2 plastic.
- Second greatest use is for sorting various categories of fiber.
- Growing use for separation of aseptic packaging.
- Many of the early optical sorters were used for glass. Many of these sorters are no longer in use, since glass no longer has strong market outlets

MRFs are a Private Sector Business

- About 22% are owned and operated by the public sector. Average throughput= 39 tpd.
- 13% are owned by the public sector, and operated by a private firm. Average throughput=158 tpd.
- That leaves 65% owned and operated by private firms. Average throughput = 233 tpd.

Figure 7: Public/ Private Sector Role

Public Private Sector Role



A Word About Private Firms.

- Regional and national integrated firms, i.e. haul and process. Constitute nearly half the owners-45%
- Processors only, specializing in MRF operation. – 5%
- Fiber Mill Owners -5%
- Local family owned enterprises -38%
- Non-profit organizations-6%

Are Mixed Waste Plants a Stalled Trend?

- There are now at least 45 operating plants.
- Mixed waste plants are mainly found in California, which has 33 such facilities.
- Like single stream in the last decade, it initially appeared that mixed waste plants were making their way eastward. Implementation seems to have stalled.

Mixed Waste Plants Examples

- Western Placer County CA-Operating since 1996. Underwent expansion and put in a new line to handle the recyclables.
- Pratt Industries, Conyers GA-Planned facility. First step in a \$13 million Eco-Campus
- Two facilities planned in Maryland

However...

- Advanced Mixed Recovery Facility, Montgomery AL– Infinitis Energy Project began operations in 2014, but ceased operating as of October 2015.
- Under review in Austin TX, Houston, TX and Indianapolis, but abandoned or on hold.
- Long time facility in Ohio closed as of 2014.

Some Thoughts About the Immediate Future

- MRFs are getting larger. Regionalization will continue.
- MRFs are becoming more mechanized.
- Single stream systems are continuing their march eastward. Most localities are converting.
- Curbside programs are expanding in terms of materials being accepted, particularly with respect to fiber and plastics. However, particularly in the Northwest and South, glass has been or will be dropped from municipal programs.
- Declining markets are forcing an evaluation of recycling approaches. Global markets are becoming more discerning, demanding a higher quality product.
- Implementation of separate food waste collection
- Mixed waste processing is being considered.

Some Thoughts about the More Distant Future

- Role of sustainability models—i.e. food waste management, producer responsibility, biodegradable plastics
- More aggressive recycling in the commercial sector.
- Re-design of office, home and products to accommodate resource conservation.
- “Back to the future? ”—sorting at the source and not at a centralized facility.
- European model of legislation to pre-treat all waste prior to disposal.
- Increase of 3 bin system-organics, recyclables, garbage. Perhaps collapse to two-bins, organics and inorganics.

Thank You!

Contact:

Eileen Berenyi, PhD

Governmental Advisory Associates, Inc.

ebb@governmentaladvisory.com

203-226-3238