Market update: China, paper, plastic & more

Market volatility and uncertainty are key works for 2017 markets

• China has banned 24 types of materials beginning September 1:
  ✓ **Mixed plastics.** Plastics will likely no longer be shipped to China
  ✓ **Mixed paper.** Paper quality will likely be scrutinized and new markets will be necessary over the next few years

• Cardboard volumes and pricing has remained strong in 2017 due to growth of e-commerce

• Markets for plastics 3-7 have constricted. Few markets for mixed bales and pricing is too low for sorting all grades

Quality continues to be a key area of focus for recyclers. Focusing on recycling the right things well and reducing contamination will be critical for long term sustainability of local programs
Current recycling goals

• For 30 years, weight-based recycling has been our measure of material management performance

• States, cities and corporations have developed high goals: 50%, 75%, 100%

• Cities added more materials and convenient programs to help achieve their goals.

• Current goals do not consider environmental outcomes

Do we have the right goals?
Social & behavioral trends impacting recycling

Demographics changes & on-the-go lifestyles

Baby Boomers / Aging population

- Smaller household size = Smaller portions & more pre-prepared food

Millennials

- 79 million this year (larger than baby boomers)
- Not bound to traditional packaging (cans, jars and bottles)
Evolution of Packaging

HOW PACKAGING IS EVOLVING: 2013 to 1990 Baseline

Source: USEPA RRS
What we recycle now

Traditional cost model of MRFs

2013 RECYCLING RATE

DECLINING PREVALENCE

INCREASING PREVALENCE

Most is not collected thru curbside

89%

newspaper 67%
glass containers 34%
stee containers 41%
other paper & nondurable goods 28%
aluminum containers 28%
HDPE natural bottles 18%
other plastic containers 14%
plastic bags, sacks, & wraps 31%
other plastic packaging 2%
Weight/volume trends

**WEIGHT**
- **8%** increase in weight

**VOLUME**
- **37%** increase in volume

<table>
<thead>
<tr>
<th>Material</th>
<th>2000</th>
<th>2010</th>
<th>2000</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass</td>
<td>71,300</td>
<td>77,100</td>
<td>925,627</td>
<td>1,273,741</td>
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<tr>
<td>Metal</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Plastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td></td>
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</tbody>
</table>

Weight: 71,300 tons in 2000 vs. 77,100 tons in 2010.
Volume: 925,627 cubic yards in 2000 vs. 1,273,741 cubic yards in 2010.
Online sales account for just 3% of the $795B CPG market.

While revenue from traditional retail drew 1.5% in 2015, online sales revenue grew by 14.5%.

A projected four-year compounded average growth rate of 18% means that nearly half of the growth the industry will experience through 2020 will come through digital channels.

Millennials are digital savvy consumers and are approaching their peak spending years. Much of their spending will be online.
Are our recycling goals realistic?

**Easily Diverted – Recyclable Materials – 30-40%**
- Low cost, high diversion potential
- Common materials - OCC, paper, metals, basic plastics, glass
- Local infrastructure available
- Success through best practices

**Harder to Divert – Organics – 20-30%**
- Food waste, green waste
- Infrastructure limited
- Higher level of segregation and best practices required

**Challenging to Divert – 10%**
- Small rigid, flexible packaging, etc.
- Not compatible with existing infrastructure
- Contamination potential
- Investment needed to prove solutions

**Manageable? - 20%**
- Not separable
- Sanitary wastes, dirty streams, trash
- High cost to separate/clean
- If not landfill, need alternative infrastructure

**Diversion Focused Management**
- Two different approaches
- Informed by science
- Focused solely on environment

**Sustainable Materials Management**
- Low cost, high diversion potential
- Common materials - OCC, paper, metals, basic plastics, glass
- Local infrastructure available
- Success through best practices

**Growing**

**Today**

**Growing**

**Tomorrow**

**Unknown**
Shifting Perspective: Changing the Goal

Is our goal to recycle more tons?

Or reduce environmental impact?

The goal is to reduce environmental impacts. Recycling is one way to achieve the goal. Reduction is a better way to achieve the goal.
## Which is Better From a Life Cycle Perspective?

(Note: Use Phase not included)

<table>
<thead>
<tr>
<th>Coffee Packaging (11.5 oz product)</th>
<th><em>Package Wt.</em></th>
<th>*Product-to-Packaging Ratio</th>
<th>*Energy Consumption (MJ/11.5 oz.)</th>
<th>*CO₂ eq Emissions/11.5 oz</th>
<th><strong>Efficient Use of Space (relevant for storage and transportation)</strong></th>
<th><strong>Recyclable postconsumer</strong></th>
<th>*<strong>MSW Waste Generated (lbs./100,000 oz. of product)</strong></th>
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<tbody>
<tr>
<td>Folgers</td>
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</tbody>
</table>

Source: US EPA
Weight based recovery measurement

- Aluminum Cans
- Mixed Paper (general)
- Corrugated Containers
- Steel Cans
- Newspaper
- PET
- Mixed Plastics
- HDPE
- Glass
- Carpet
Oregon’s Material Specific Recovery Goals

25% reduction by 2025

25% reduction by 2020

25% reduction by 2020
1. Life cycle analysis (LCA) and Sustainable Materials Management (SMM) create a different measurement of success in waste management

2. LCA is suited to assess the environmental impact of products in management systems

3. SMM was developed as a policy-influenced approach that integrates life cycle thinking into materials management with a goal of decoupling economic growth from consumption

4. SMM is an important tool in the solid waste director’s tool box

JD Lindeman, RRS Consultants
Maryland Recycling Conference - 2017
Scenarios build upon each other

- 84% GHG benefit from aggressive LFG capture & use + recycling 32% of MSW
- More processing = high incremental cost for low incremental GHG reduction
Summary

- Keep the focus on waste reduction and recycling quality
- Focus on Design-for-Recycling and using post-consumer materials
- Prioritize programs for best overall environmental results
- Continue to work along the entire value chain to coordinate programs and messaging.

Policies should focus on the primary goal: Reducing overall environmental impact
Thank you!