THE PERFECT STORM

Economic Impact of Changes in the Recycling Industry

RECYCLING

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PUBLIC AND PRIVATE PARTNERSHIPS MUST WORK TOGETHER AND ADAPT TO INDUSTRY CHALLENGES

THE PERFECT STORM CHALLENGE at Happened

STREAM COMPOSITION

CHANGES

• Shifts in consumer preferences, increasing levels on non-recyclables in the bin and industry driven product light weighting

RISING LABOR COST

• Legislative actions continue to increase minimum wages rates \$0.50/hr can increase labor cost by as much as \$3 per ton.

INCREASING MAINTENANCE / PROCESSING COSTS

Negative effects of stream composition, increased down time due to higher contamination rates and requirements attributed to "green fence"



DEPRESSED COMMODITY PRICES

 Global commodity valuations continue to be depressed with light support for higher prices

COMPOSITION

SHIFTING CONSUMER PREFERENCES AND NEW PACKAGING DESIGNS ARE CAUSING A SIGNIFICANT CHANGE IN THE COMPOSITION OF WASTE STREAMS PROCESSED BY MRFS

COMPOSITION

PAPER AND NEWSPRINT

Increased online consumption of news and media has significantly reduced the amount of newspapers and magazines available to recycle.

SOURCE REDUCTION

Aluminum and metal containers are becoming thinner and lighter, requiring more units and effort at the MRF to collect and sort the same metric tonnage.

BIO-BASED PACKAGING

Non-recyclable biobased packaging, like PLA, often gets mixed with recyclables like PET, thus contaminating the stream and reducing overall value.

FLEXIBLE PACKAGING

Manufacturers are seeking out and using flexible composite plastic packaging, instead of paper or glass. These materials are difficult to recycle, if they can be recycled at all.



2005 SUNDAY NEWSPAPER

2015 SUNDAY NEWSPAPER



DECLINE OF NEWSPAPER

- Newsprint Facts (source: EPA)
 - 1960: 7 million tons of newsprint
 - 2000: 15 million tons of newsprint
 - 2012: 8 million tons of newsprint
- Newspaper Circulation Facts
 - 1990: Daily & Sunday papers just under 70% of US households
 - 2010: Daily & Sunday papers under 40% of US households

Source: Communications Management, Inc. "60 Years of Daily Newspaper Circulation Trends



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ONGOING PLASTIC CONTAINER SOURCE REDUCTION (LIGHTWEIGHTING) BY THE LARGEST CONSUMER **PRODUCT COMPANIES REDUCE PLASTIC AVAILABLE** FOR RECOVERY



RECYCLABLES WEIGH LESS

- Many packaging types are thinner and lighter than in the past
 - Newspapers reduce paper sheet 10-15% in 2000s
 - 2 liter soda bottle weighs 25% less than in 1970s
 - PET water bottle weights down 32% 2000-2008
 - Aluminum Cans 17% lighter than in 1990
 - Milk jugs (HDPE) 30% lighter than 1980







THIS MEANS FAR **MORE UNITS TO** SORT TO MAINTAIN SAME WEIGHT OF RECYCLING









Coca-Cola has reduced its PET bottle materials by

Reduced the amount of materials used to make PET bottles by



Eco-Shape® bottle uses an average of 30%/0%/0%

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Less plastic versus comparable sized carbonated and noncarbonated beverages



PepsiCo reduced its packaging by 109 million pounds in 2013, with

23% percent of the savings in

PET bottles, closures, and labels



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ALUMINUM AND METAL CONTAINERS ARE UNDERGOING SIMILAR PACKAGE SOURCE REDUCTION TRENDS, REQUIRING MORE UNITS AND LABOR TO ACHIEVE THE SAME OUTPUT







CONTAINERS

- Many recyclable forms of packaging, such as paper and glass are swiftly losing market share to a diverse variety of non-recyclable plastic packaging
- The flexible packaging industry is one of the fastest growing packaging sectors as companies use increasingly difficult to recycle flexible composite plastic packaging







"VIRTUALLY NONE OF THESE FLEXIBLE PACKAGING **MATERIALS ARE** RECYCLABLE **ANYWHERE IN THE WORLD**"

- Natural Resources Defense Council

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INCREASE IN FLEXIBLE PACKAGING

- Fast growing packaging trend is flexible plastics
 - Multiple resins combined in single product
 - Very light weight 1. 5 lbs flex plastic replaces:
 - 50 Lbs of Glass
 - 6 Lbs rigid PET
 - 3 Lbs aluminum
 - \circ When empty, is flat and behaves like paper
- These contaminate Recycling Streams





CONTAMINATION

NON-RECYCLABLE RESIDUE AND CONTAMINANTS ARE CONSISTENTLY HIGH ACROSS FACILITIES, LOWERING PLANT EFFICIENCY AND THE VALUE OF COMMODITIES PRODUCED

DESCRIPTION

WISHFUL RECYCLING

Major cause is "wishful recycling." Residents toss items in the recycling bin/cart, hoping materials can be recycled, even if not officially acceptable.

UNSAFE MATERIALS

Yard waste, wood, hoses, wires, cables as well as bio-waste items medical waste, diapers and needles create extremely dangerous conditions for our employees.

HOUESEHOLD WASTE

Residents in some areas are simply treating the recycling cart as an extra trash can, contaminating the stream with food waste, dirt and plastic bags, which cause significant downtime at the MRF.

DANGEROUS CONTAMINATION

- Lack of care in households for what goes in the recycling container
 - More food waste, other household trash
 - Compost doesn't belong in recycling
 - Yard waste, wood, hoses, etc. on the rise
 - Increase incidence of bio waste materials
 - Medical wastes made from plastics
 - Used personal hygiene products like diapers





RESIDUE RATES ON THE RISE

- Quantity of non-recyclables on the increase
 - Residue rates in MRFs up 2-3 percentage points
- Quality of non-recyclables getting worse
 - More true trash and bio-waste materials
- Disposal costs going up
 - Lowers ability of recyclers to share revenue
- Lost revenue opportunity
 - Reduced sell ables cuts into available revenue





QUALITY STANDARDS

- As a recycler, we must enforce more stringent quality standards for inbound materials
- We have had an influx of unacceptable materials/contaminated loads at many of our facilities
- Costs time and money to inspect/reject/ extract contaminants from the system
- Creates dangerous conditions for our employees



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MRF FINANCIAL PERFORMANCE HAS SUFFERED DUE TO THE CUMULATIVE NEGATIVE EFFECT OF STREAM COMPOSITION CHANGES ON PRODUCTIVITY & COMMODITY VALUE

COSTS

CAUSE & EFFECT

Stream composition changes can directly cost a typical MRF up to nearly \$100k per month in lost productivity due to slower throughput, higher residue rates and increased downtime.

LABOR INCREASE

MRFs create opportunity for entry level workers and are sensitive to minimum wage increases.

Legislative actions are increasing hourly wages

\$0.50/hour increase can raise processing cost by \$3/ton.

CPI DISPARITY

Many contracts use CPI as a measure of labor cost increases, however, wages and benefit costs are steadily rising faster than CPI.

RISING COSTS

- MRF must run slower to remove non-recyclable materials when there is higher residue content
 - Monthly throughput decreased 3% from 2012 to 2015 at ReCommunity MRFs
- Additional staff are needed to manually sort stream:
 - Heightened quality requirements
 - Equipment not configured to handle new stream composition
 - Increase in non-recyclable materials which must be screened manually
- High residue content lowers the value of outbound commodities produced
 - Average residue per ton increased from 9% in 2012 to 13% in 2014



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PLASTIC FILMS AND BAGS GET TANGLED IN OUR EQUIPMENT, AND OUR CREWS MUST STOP OUR MACHINERY SIX TO EIGHT TIMES A DAY TO CUT THEM OUT

- Waste Management



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LABOR COST INCREASES HAVE STEADILY OUTPACED CPI-BASED ADJUSTMENTS CALLED FOR IN MOST OF RECOMMUNITY'S CONTRACTS



RISING MRF MAINTENANCE & PROCCESSING COSTS

IMPACT OF HIGHER WAGES

- Upside: May be easier to attract and retain staff
- Downside: Cost per ton jumps up
 - Every \$1 per hour translates to between \$1-\$6 per ton depending on headcount, throughput rate
- Increased Cost must be accounted for in deal structures; Recyclers can't absorb this expense
- CPI increases don't keep up with Wage Rates



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IT IS LIKELY THAT FURTHER INCREASES IN THE MINIMUM WAGE BY STATE LEGISLATURES AND **INDIVIDUAL COMPANIES** WILL CONTINUE





COMMODITIES

THE MARKET FOR RECYCLED COMMODITIES HAS GLOBALIZED WHILE PRICES FOR ALL RECOVERED MATERIALS HAVE BEEN IN A PROLONGED DECLINE



COMMODITIES

COMMODITY PRICING LOW

ONP & OCC pricing has declined over the past few years. Plastic prices have dropped sharply due to declines in oil pricing.

CHINA CONNECTION

China's "Operation Green Fence" raised the quality bar, forcing MRF operators to work even harder at producing high quality materials in a complicated stream.

FUTURE UNCERTAIN

Forecasts vary on how long oil prices will stay low. Some industry analysts predict that pricing will not return to higher rates until 2020 or later.

AVERAGE COMMODITIES VALUES CORRELATED WITH OIL

ACR and oil prices* appear to be correlated over the last decade and long dated oil future contracts indicate slow growth in prices over the next four years



THE COST OF QUALITY

- Higher buyer expectations require more sorting, fewer contaminants
- More sorting requires slower speed, more staff, or both
- Higher quality expectations reduces the possibility of 'tag along' recycling of other materials
- Result is higher residue rates in MRFs, and higher sorting costs





WE MUST ACT IN PARTNERSHIP TO ADAPT TO THE STRUCTURAL CHANGES FACING THE **INDUSTRY AND SECURE THE** LONG-TERM SUSTAINABILITY **OF RECYCLING PROGRAMS**

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NEED FOR STRUCTURAL CHANGE



Recycling cannot be seen as 'free'
Recyclers cannot bear the combination of higher costs and lower revenues
Residents need to understand and take on the cost of recycling

SUSTAINABLE DEAL **STRUCTURE SUPPORTS MRF INVESTMENTS IN LOW MARKETS WHILE OFFERING INCREASED VALUE TO CONSUMERS WHEN MARKETS RETURN**



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