Recycling: Have we set the right goals?

THINK GREEN.

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SWANA
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WM Recycling Services

88%  
Increase in amount of recyclables managed since 2007

14 M  
Tons of recyclables extracted from the waste stream

104  
Materials recovery facilities owned/operated by Waste Management

WM has invested over $1 billion in recycling infrastructure
The Role of Goals

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

• States, cities and corporations have developed 50%, 75% and even Zero-Waste goals; however, these goals do not contemplate overall environmental or economic outcomes

• As the waste stream has changed and as we use lifecycle analysis to measure environmental impacts of products and packaging, we see the need to look beyond weight based recycling goals and consider a more diverse set of goals.
The Reality of Municipal Recycling

Only about 70% of the US waste stream can actually be recycled or composted.

- **20% IMPOSSIBLE TO RECOVER**
  - Diapers, painted Christmas trees, cat feces, broomsticks, skateboard wheels

- **10% CURRENTLY NOT ABLE TO RECOVER**
  - Toothpaste tubes, sandwich bags, lip balm tubes, drink pouches, contact lens packaging

- **70% RECYCLABLE/COMPOSTABLE**
  - Water bottles, soda cans, newspapers, cardboard boxes, yard debris, food scraps

**POWER OF LOCALITIES**

- Influence presence and type of recycling programs
- Define what “recycling” means and what is included (i.e., C&D, daily landfill cover, WTE, etc.)
- With a national recovery rate of 34.3% (25.4% recycling & 8.9% organics recovery) most communities underperform
- A few high performing localities are responsible for much of the recycling in the U.S.
The Focus for Today – and Aspiration for Tomorrow

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 req’d

Challenging to Divert – 10%
- Small rigid, flexible packaging, etc.
- Not compatible w/ 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 alt infrastructure

Diversion Focused Mgmt
- Sustainable Materials Mgmt

Materials Management
- Two different approaches
- Informed by science
- Focused solely on environment
Social & behavioral trends

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)
The evolving ton

- Less Paper.....
- More plastic....
- More non-recyclables pouches
- Lightweight packaging
Units Matter: Weight/volume trends

9% increase in weight

<table>
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<th>2010</th>
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<tbody>
<tr>
<td>Glass</td>
<td>71,300</td>
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<tr>
<td>Metal</td>
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37% increase in volume

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In some U.S. communities, we see up to 50% contamination, by weight, in materials collected for recycling.

Contamination costs over $120/ton.

On average, contamination makes up about 16% of collected recycling, by weight.

Processing costs have increased due to more stringent quality standards, resulting in higher customer costs.

Contamination costs WM $60 Million per year.
MRF Economics – Increasing Costs

Composition of Materials Entering Single Stream MRFs

- 18% of inbound recyclables are glass and 16% are contaminants
- 34% of MRF inbound materials have a net cost not revenue.

MRF feedstock has changed by 30% over the past decade
Challenging Global Economics

• This 4-plus year decline in commodity prices is driven by global market conditions - with no end in sight.

• Chinese economy

• Strong U.S. dollar

• Low oil prices
Technology and the global marketplace have evolved

Do we need a paradigm shift?
“An approach to serving human needs by using/reusing resources productively and sustainably throughout their life cycles, generally minimizing the amount of materials involved and all associated environmental impacts.”

Sustainable Materials Management: The Road Ahead, EPA (2009)
Hidden material flows (i.e., wastes) account for up to 75% of the total materials moved, but are not accounted for in the gross domestic product.
### Which is Better From a Life Cycle Perspective?

(Use Phase not included)

<table>
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<th>Coffee Packaging (11.5 oz. product)</th>
<th><em>Package Wt.</em></th>
<th><em>Product-to-Packaging Ratio</em></th>
<th><em>Energy Consumption (MJ/11.5 oz.)</em></th>
<th><em>CO2 eq Emissions/11.5 oz.</em></th>
<th><strong>Efficient Use of Space</strong> (relevant for storage and transportation)</th>
<th><strong>Recyclable postconsumer</strong></th>
<th>*<strong>MSW Waste Generated (lbs./100,000 oz. of product)</strong></th>
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Source: US EPA
What is the goal?

To recycle more?

To reduce GHG emission?
Weight based recovery measurement

- Glass
- Aluminum
- PET Plastic
- Asphalt Shingles
- Carpet
Oregon’s outcome based recovery
Example of new material specific recovery goals

- Carpet: 25% by 2025
- Food: 25% by 2020
- Plastics: 25% by 2020
84% of GHG reduction benefit from 32% diversion through Residential & Commercial SS Recycling
A TRULY SUSTAINABLE MATERIALS MANAGEMENT STRATEGY

Goals & Metrics

Environmental
Economic
Community

Manufacturers
Converters
Brands
Retailers
Reprocessors
MRF/Composters
Haulers
Municipalities
Consumers

- Higher contamination
- Shifting cost model
- Green fence

- Zero waste goals
- Value recyclability
- Reputation risk

- Customer requirements
- NGO pressures

- Concerns for litter and marine debris

- Desire to be environmentally responsible
- Confused about what is recyclable
Implementing Programs

• Lifecycle thinking allows us to develop programs with the best environmental impacts

• Strategic focus has many benefits:
  ✓ Effective consumer messaging
  ✓ Simpler messaging reduces consumer confusion, which means less contamination
  ✓ Cleaner material means less cost
  ✓ More recycling of the right materials

• Science and data can help us create and implement the right environmental goals
Overall environmental benefits must be our first priority.

Goals should rely on lifecycle analysis to target specific materials with the greatest environmental benefits.

Measurement should include per capita generation, recycling and disposal.