Recycling Reimagined
Overcoming Today’s Challenges...

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Agenda

• Today’s Challenges
  • Trends in Materials & Packaging
  • China Sword Impact
    • Processing
    • Markets
• Future Direction
  • Business Model
  • Education
Trends in Material

**Trends**

Material no longer in circulation
18M tons in 2000 → ~2M in 2015

Lighter-weight and limited end markets
HDPE → off-spec PET

Lighter-weight and flexible packaging not recyclable

**Implications**

Waste minimization increasing pressure on total waste and recycling tons
China Sword Processing Impacts

• Reduced processing speeds
  – As a result, some facilities are unable to handle daily material volume
• Added human resources to our sorting lines
• Increased self-inspections to further reduce contamination
• Explored investments in newer, more accurate sorting technology (in select markets)

While we continue to process mixed paper and old newsprint, we are proactively evaluating the need to dispose of excess material that deteriorates beyond the point of commercial value, or poses safety risks.
China closes the door, prices crash

The average price paid to recyclers for a ton of mixed paper in the Pacific Northwest and across North America has plummeted in the last year.

Source: RecyclingMarkets.net

EMILY M. ENG / THE SEATTLE TIMES
A. The Revenue Payment to either the City or Contractor shall be determined according to the following formulas. If the value is positive it is a payment to the City, and if the value is negative it is a payment to the Contractor.

**Revenue Payment** = [Net Revenue Per Ton x (Tons of Collected Materials – Tons of Documented Unacceptable Materials)]

**Net Revenue Per Ton** = [[AMVI - BMVI] x 0.75] – PF

**AMVI or BMVI** = [[RMP_{MV} x RMP_{CSP}] + [CC_{MV} x CC_{CSP}] + [Al C_{MV} x Al C_{CSP}] + [MM_{MV} x MM_{CSP}] + [#3-#7P_{MV} x #3-#7P_{CSP}] + [PET_{MV} x PET_{CSP}] + [HDPE NP_{MV} x HDPE NP_{CSP}] + [HDPE CP_{MV} x HDPE CP_{CSP}] + [0 x MG_{CSP}] + [AC_{MV} x AC_{CSP}]]

- **MV** = An individual Recyclable Material’s Market Value (as listed in the Reference Source Indices)
- **BMVI** = Base Market Value Index
- **AMVI** = Adjusted Market Value Index
- **CSP** = Commodity Share Percentage
- **PF** = Processing Fee
The Cost of Recycling

<table>
<thead>
<tr>
<th>Collection</th>
<th>Processing</th>
<th>Residual</th>
<th>Commodity Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cost to provide truck, driver, container and scheduled collection service on contracted basis</td>
<td>• Capital &amp; labor intensive process</td>
<td>• Contaminated or non-recyclable material</td>
<td>• Processed material transported and sold to end markets</td>
</tr>
<tr>
<td>• Collected material transported to processing facility</td>
<td>• Commingled material sorted into separate products, removing contamination</td>
<td>• No marketability</td>
<td>• Subject to quality standards</td>
</tr>
<tr>
<td></td>
<td>• Clean products baled and prepared to ship</td>
<td>• Must be transported and disposed at landfill for a cost</td>
<td>• Product mix and quality drives value</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Some material may have negative value</td>
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</tbody>
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The cost of a recycling collection program is the sum of the **Collection Charge** and the **Net Processing Fee**

**Monthly Collection Charge**

**Net Processing Fee**
(Commodity sales – processing costs – residual cost)
Long Term - Public Education

1. Public Education – *WHAT to Recycle*

<table>
<thead>
<tr>
<th>ALWAYS Recyclable</th>
<th>NEVER Recyclable</th>
<th>SOMETIMES Recyclable (Select Markets)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>Diapers</td>
<td>Plastic Bags</td>
</tr>
<tr>
<td>Plastic</td>
<td>Garden Hoses</td>
<td>Glass</td>
</tr>
<tr>
<td>Metal</td>
<td>Shoes/Clothing</td>
<td></td>
</tr>
<tr>
<td>Cardboard</td>
<td>Food Waste</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yard Waste</td>
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</tr>
</tbody>
</table>

2. Public Education – *HOW to Recycle*

- Route based target marketing
- Market specific
- Media engagement
- Focus on education to drive decontamination
Recycling: Simple as 1-2-3

1. Know what to throw
   Cardboard, paper, metal cans, plastic bottles and jugs.

   Keep all recyclables free of food and liquid.

3. Keep it loose
   Never put recyclables in containers or bags.

Paper & Cardboard
Flattened cardboard, newspapers, magazines, office paper and common mail.

Metal Cans
Beverage and food cans.

Plastic Bottles & Jugs
Food and liquid containers with the lids on.

www.RecyclingSimplified.com
Recycling: Simple as 1-2-3

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No Soiled or Wet Materials

Just one dirty bottle or item can contaminate the contents of a whole recycling truck. Once cardboard or paper comes into contact with food or liquid, it can no longer be recycled.
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Don't Bag or Contain
No bags go in the recycling container, and never put recyclables in bags or containers.

No Connected or Mixed Materials
When two or more materials are connected, like paper envelopes with plastic bubble wrap inside, the items can't be recycled.

www.RecyclingSimplified.com
- Food waste
- Soiled or wet paper and cardboard
- Liquid in bottles
- Coffee cups

- Empty, Clean, Dry™
- No smell
- No plastic bags
- No bagged recyclables

www.RecyclingSimplified.com
Long Term - Reassessment of Accepted Materials

- Programs have drifted to focus on total diversion rates, rather than what materials are truly beneficial to recycle.

- Some collected materials are recyclable, but lack local end markets, or have a negative recycling value. These realities render the processed materials unmarketable.

- Municipalities need to shift program focus to Sustainable Materials Management-based views, which looks at the overall benefits of each accepted material in the stream.

Recycling programs must focus on Sustainable Materials Management, not simply diverting material that may have no beneficial use.
Republic Services Las Vegas Recycling Center
We’ll handle it from here.™