Recycling Interventions and Solutions

Scott Byrne, Environmental Specialist
Scotta.Byrne@tetrapak.com
2016 SERDC Summit
Atlanta, Georgia November 9th
Tetra Pak: Full System Supplier

World Leader in Liquid Food Processing and Packaging Solutions

- Processing Equipment Engineering
- Packaging, Filling Equipment, Distribution Solutions
- Services and Consultancy
Tetra Pak Globally

Present in more than 175 countries across 5 continents

185 billion packs sold in 2016

9,000 filling machines in operation in 2014

42 packaging material plants

11 R&D Centers

Net Sales: 10.9 billion Euros

23,600 employees
Key targets to deliver environmental performance

- **Develop sustainable products**: Develop 100% renewable carton package, 100% FSC-certified paperboard
- **Reduce environmental footprint across the value chain**: Cap CO2 emissions to 2010 despite growth (40% reduction)
- **Increase carton recycling**: Double the global recycling rate by 2020 (40%)
Agenda

- Introduction to Tetra Pak
- Recycling Interventions
- Carton Industry Solutions
- Tetra Pak Solutions
- Measuring Success
Recycling Interventions

Not to mention the hundreds of municipalities, non-profit and for-profit entities working on educating the public and finding long-lasting solutions.
Is more funding needed?

- Need to assist municipalities/states to strengthen existing/adopt new funding approaches?
- How to expand voluntary supply chain initiatives?
- What further research needed?
Agenda

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In 7 years, we’ve brought carton recycling to **58.8%** of all US households!
Focus on expanding Carton Recycling Access
The foundation to grow carton recycling rates

- 80 of 100 - Top U.S. Communities
- 12,000 Communities
- 48 States
- 58.8% U.S. Households
- 222% Increase in Carton Recycling Access
- 67,797,262 U.S. Households

Carton recycling data reflective through July 2016.
Work Backwards from End Markets

Build sustainable markets

Develop awareness and participation

Create sustainable infrastructure
Promote carton recycling on-pack
To inspire consumers

Today
2017 and Beyond
On the horizon

► Continue expanding access
► Boost carton recycling
► National carton recycling consumer education campaign & collaboration for consumer outreach
► Roll out PAYT campaign/white paper on funding alternatives
Agenda

Introduction to Tetra Pak

Recycling Interventions

Carton Industry Solutions

Tetra Pak Solutions

Measuring Success
Test new recycling collaborative models

NC working together

SUPPORTING THE THRIVING RECYCLING INDUSTRY ACROSS THE STATE

The Tennessee Coalition to Advance Materials Recovery: Reviewing a Proposal for Action Effectively and Efficiently Drive Recovery
Build recycling champion in North Carolina

- Tetra Pak Identified North Carolina as a state ripe for targeted intervention
  - Recycling investment and job growth had been growing throughout the state
  - Despite this growth, 1/3\textsuperscript{rd} of NC’s disposed material were recyclable, forcing manufacturers to import recycling feedstock from across the US
  - The DENR Division of Environmental Assistance and Customer Service grants were reduced in 2013 budget cuts
Drive data collection & best practices implementation in Tennessee

- After NC, Tetra Pak identified Tennessee as another state ready for an intervention
  - Only 1 in 4 Tennesseans had access to curbside recycling
  - Municipalities with a recycling program were falling short of those who instituted best practices

Municipal Recovery of Paper and Packaging in North Carolina and Tennessee
Assess best practices and gaps for focused intervention

THE COALITION TO ADVANCE RECOVERY IN TENNESSEE
BEST PRACTICES SURVEY

BEST PRACTICES LEAD TO RECOVERY

A KEY FINDING OF OUR RESEARCH IS THAT HIGHER ADOPTION OF BEST PRACTICES AND POLICIES LEADS TO GREATER RECOVERY OF MATERIALS.

MEMPHIS

174k HOUSEHOLDs SERVED

49% EFFECTIVENESS RATING

164 POUNDS PER HOUSEHOLD

LE PER HI RECYCLED

ADOPTION OF BEST PRACTICES

OPPORTUNITY

- FUNDING
- FINANCIAL
- POLICY
- COMMUNICATION
- PROCESSING
- COLLECTION

COLLECTION

PROCESSING

COMMUNICATION

POLICY

FINANCIAL

FUNDING
### Collection
- **Materials Collected**
  - Glass Bottles and Jars
  - Plastic containers 1-7 (no Styrofoam)
  - Paper/Cardboard
  - Aluminum Foil
  - Aluminum Cans
  - Steel Cans
- **Household participation rate** 35%
- **Multifamily**
- **Commercial**
- **Away from Home Collection**
- **Carts**
- **Single Stream**
- **Curbside**
- **MRF/Transfer Station Access**
- **Weekly Collection**
- **High Capacity Vehicles Used**
- **Automated Vehicles**
- **Core Materials**
- **Yard Waste**
- **Food Waste**
- **Commercial Food Waste**

### Processing
- **MSW Transferred to landfill**
- **MSW direct hauled to landfill**
- **MRF can process additional materials**
- **MRF/Transfer Station within 10 miles**
- **MRF runs one shift**
- **MRF Residue below 10%**
- **Processing contract**
  - Multiple MRFs available
- **336,723 TONS LANDFILLED**
- **49,297 TONS RECYCLED**
- **14,279 TONS COMPOSTED**
- **$1.25 MSW TIPPING FEE**

### Communication
- **Website with educational materials**
- **Keep America Beautiful programs**
  - The Recycling Partnership programs
  - Listed in Earth911 Directory
- **$90k Annual education & outreach budget**

### Policy
- **Recycle Rewards/Recycle Bank**
- **Mandatory recycling ordinance**
- **Enforcement**
- **Mandatory recycling legislation**
- **Landfill ban**
- **Pay As You Throw program**
- **Other diversion initiatives**

### Financial
- **Revenue sharing**
- **Franchise agreement**
- **Tax based funding**
- **Fee based funding**
  - Extra recycling charge for citizens

### Funding
- **State grant funding available**
- **Awarded grant funding within past 3 years**
- **Grant funds cover recurring costs**
- **Partnered with other municipalities on grant projects**
- **Utilizes private sector partnerships**
- **Utilizes TRP grant program**
- **Utilizes Closed Loop Fund resources**

### Memphis Opportunities

#### Communication
- Provide increased funding on a per household basis to recycling education
- Utilize existing educational resources such as KAB and/or TRP to increase education & participation

#### Policy
- Guide local/state legislators to adopt environmentally sound, cost effective, and regionally appropriate policies
- Lobby for additional policy support including landfill ban on packaging materials
- Lobby for local policy support such as a mandatory recycling ordinance

#### Financial
- Look to available recycling industry finance tools to assist in program funding
### CART Gap Analysis

#### GAP ANALYSIS DETAILS

**HIGH RECYCLING PERFORMERS**

<table>
<thead>
<tr>
<th>Common Strengths</th>
<th>Common Opportunities (bigger picture themes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curbside collection</td>
<td>• Explore program financing options</td>
</tr>
<tr>
<td>Some education</td>
<td>• Increase education funding and messaging</td>
</tr>
<tr>
<td>Processing</td>
<td>• Policy provisions</td>
</tr>
</tbody>
</table>

**LOW RECYCLING PERFORMERS**

<table>
<thead>
<tr>
<th>Common opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Infrastructure access – better utilize existing infrastructure</td>
</tr>
<tr>
<td>• Education – Little to no investment in messaging and resident communication. Develop outreach channels.</td>
</tr>
<tr>
<td>• Partnerships – Improve regional communication to take advantage of existing program efficiencies.</td>
</tr>
</tbody>
</table>
SHARE THE LEARNINGS MORE BROADLY

RECYCLING SYSTEM GAP ANALYSIS
MEMPHIS CITY REGION

Report published November 2016
Support customers to implement waste management best practices

- Surveying and quantifying our customers plant waste
- Implementing solutions and services that reduce environmental impacts and save money
Expand market opportunities for recycled materials

Roofing tiles in Brazil
Since 2000, we have supported the market for roofing tiles made out of plastic and aluminium from recycled beverage cartons. Manufacturers and local universities cooperated to enable material analyses, which led to important product improvements. Now, over 15 roofing tile manufacturers are operating in Brazil, producing a million tiles each year.
Agenda

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- Measuring success
What matters for success…

► **Measure performance**
  - Access to capture rate data
  - Improved understanding of MRF material flow

► **Improve Performance**
  - Expand access: Multi-family; away from home; schools
  - Conversion to automatic curbside service

► **Driving Quality**
  - Maximize the value of each commodity -- MORE
  - Increase quality -- BETTER

► **Addressing the “evolving ton”**
How do we measure success?