The State of Carpet Recycling in the U.S.

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NERC Annual Conference
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Who is CARE

CARE has been THE resource for **carpet recycling** since 2002

Diverse Board of Directors

452 members

*Mission: Market-based solutions for reuse and recycle of post-consumer carpet.*
Mission

The mission of CARE is to facilitate the carpet industry lead initiative to find market-based solutions for the reuse and recycle of post-consumer carpet.

Created January 8, 2002 as a 501c3 organization
How Much Carpet is Discarded Each Year?
Total Estimated Discards per Year

Discards parallel production

Source: Data Discards.xls
Total Gross Collections per Year

Cumulative Diversion Since 2002 >3.5 Billion Pounds

Source: 2013 CARE Annual Report
Mass Balance Approach

![Diagram showing mass balance approach with inputs and outputs including:
- Gross Collections: 534M lbs.
- Reporting Boundary:
  - Landfill: 254M lbs.
  - WtE: 58M lbs.
  - CAAF/Kiln: 23M lbs.
  - Incineration: 1M lbs.
- Recycled + Reuse: 198M lbs. (37% yield)

* Including Int’l
  - 30M lbs.
  - 13M lbs recycled
  - 17M lbs to LF

Output = 198M + 254M + 58M + 23M + 1M = 534M lbs. input required]
Outlet for Pounds Collected

Source: 2013 CARE Annual Report
End Product Markets

Source: 2013 CARE Annual Report

- Engineered Resins: 50%
- Carpet Fiber: 28%
- Carpet Backing: 17%
- Other: 5%
PET went from <10% in 2008 to forecast 50% in 2015

* This chart excludes 2013 lbs. of PCC collected from 3 sources that do NOT collect PET or PP. This chart more accurately reflects actual flows of PET PCC.

PET went from <10% in 2008 to forecast 50% in 2015
Examples of Products
End Products

- Carpet Backing: 17%
- Carpet Fiber: 28%
- Engineered Resins: 50%
- Other: 5%

EcoStrate™
Our products are made from post consumer electronic Packaging, carpet and textile waste that would otherwise be discarded in our Landfills. Our process is flexible enough to utilize a variety of waste streams to create new products, signs and substrates.
GeoHay™

Gutter Buddies®

Synthetic Hay Bales & Filters
Precast Concrete, Asphalt, and Plastic
FROM CARPET TO CAR PARTS
Challenges
Three Major Challenges

• OUTLETS ← #1 Challenge
  
  ✓ PET Carpet – *economics*
  
  ✓ Nylon carcass (from shearing) - *economics*
  
  ✓ Commercial glued down carpet - *technology*
World Nylon Growth Expected

Growth driven by China

<table>
<thead>
<tr>
<th></th>
<th>Million tons</th>
<th>2013</th>
<th>2016</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>N6</td>
<td>4.57</td>
<td></td>
<td>4.98</td>
<td>+9%</td>
</tr>
<tr>
<td>N66</td>
<td>2.06</td>
<td></td>
<td>2.24</td>
<td>+9%</td>
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</tbody>
</table>
World Polyester Polymer Production (by Major Region/Country)

2012 Total = 60.25 Million Tonnes

2016 Total = 76.72 Million Tonnes

Growth = 27%

Source: PCI X&P
Practical Issues

• PET carpet growing with limited recycle outlets
• Commercial carpet glued down – very tough to handle
• Cyclical markets = tough economics
• Communications

• Inbound carpet loads not clean = disposal cost
• C&D contamination often so bad whole load must be disposed
• C&D loads 3x more expensive to sort than dealer loads
• Contamination issue rare - potential for asbestos
• Most companies do not want to pay for recycle services

Residential Carpet Most Valuable
California Update

Data available on the CalRecycle website:
www.calrecycle/carpet
California AB 2398

- Legislation to increase the landfill diversion and recycling of post-consumer carpet generated in CA*
- CARE is the Stewardship Organization for AB 2398
- Major changes April 1st
- 10 cents/sqyd fee April 1st
- Processor subsidies

*AB 2398, signed into law September 30, 2010
California Performance Trends (pounds)
# AB2398 Manufacturers’ Summary*

<table>
<thead>
<tr>
<th>Manufacturers</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Q1 '14</th>
<th>Q2 '14</th>
<th>Q3 '14</th>
<th>Q4 '14</th>
</tr>
</thead>
<tbody>
<tr>
<td># Mills Registered</td>
<td>80</td>
<td>80</td>
<td>79</td>
<td>79</td>
<td>79</td>
<td>79</td>
<td>77</td>
</tr>
<tr>
<td># Mills Not Reporting</td>
<td>0</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Non-response Rate</td>
<td>5%</td>
<td>6%</td>
<td>3%</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
<td></td>
</tr>
</tbody>
</table>

**Remittance Collected**

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Q1 '14</th>
<th>Q2 '14</th>
<th>Q3 '14</th>
<th>Q4 '14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sq Yd Sold (millions)</td>
<td>50.1</td>
<td>98.5</td>
<td>100.5</td>
<td>23.6</td>
<td>25.7</td>
<td>26.1</td>
<td>23.5</td>
</tr>
<tr>
<td>Total Remittances ($M)</td>
<td>$2.53</td>
<td>$4.91</td>
<td>5.0</td>
<td>$1.18</td>
<td>$1.28</td>
<td>$1.31</td>
<td>$1.17</td>
</tr>
<tr>
<td>Top 10 Remittances (&gt;10K)</td>
<td>$2.33</td>
<td>$4.55</td>
<td>4.65</td>
<td>$1.05</td>
<td>$1.18</td>
<td>$1.20</td>
<td>$1.06</td>
</tr>
<tr>
<td>Top 10 Percentage of Total</td>
<td>92%</td>
<td>93%</td>
<td>92%</td>
<td>89%</td>
<td>92%</td>
<td>92%</td>
<td>90%</td>
</tr>
</tbody>
</table>

Cumulative SQYD sold: 348M  
Cumulative Remittances: $17.4M  

* As of 2/10/15
Net Landfill Diversion
(Gross Collected - Sent Back to Landfill)

Q4 Diverted = 19.5M – 5.3M lbs. sent back to landfill
Cumulative back to landfill: 51.8M lbs.
Lessons Learned

- Learning on the fly
- Do not have all answers from start
- $s$ involved = creative people
- Gaming system $\rightarrow$ problems $\rightarrow$ shutdowns
- Developed agreed upon procedures (AUPs)
- Audit/review process critical (independent)
- Build in early indicators – Inventory vs. Processed
- Address issues early and aggressively
Lessons Learned

- Confidentially: individual business information important
- Constant analysis and refinement of AUPs
- Regular & transparent reporting
- Stakeholder engagement essential
- FAQs help
- A few states trying to pursue EPR:
  - CA*, MN, CT

* implemented
Contact Information

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