

CalRecycle Zone Works Workshop

June 6, 2012



The First Year:
Challenges
Lessons Learned
Moving Forward

Presentation Overview

- **Three-minute music video of our first-of-its-kind carpet recycling facility in La Mirada CA**
- **Carpet Recycling 101**
- **Challenges encountered and lessons learned or...**
 - “Trying something first isn’t easy” especially with...*
- **Financial trials and tribulations (AB 2398 – making the difference)**



“What Goes Around Comes Around...”



The Carpet Recyclers' Music Video



Used Carpet Resources in California

- **Estimated 400 million pounds of carpet disposed in landfills annually**
- **Represents over 32 million gallons of oil wasted and...**
- **GHG emission reductions (per EPA 2/2012 WARM model)**



Carpet Recycling 101:

Carpet Type Drives Options

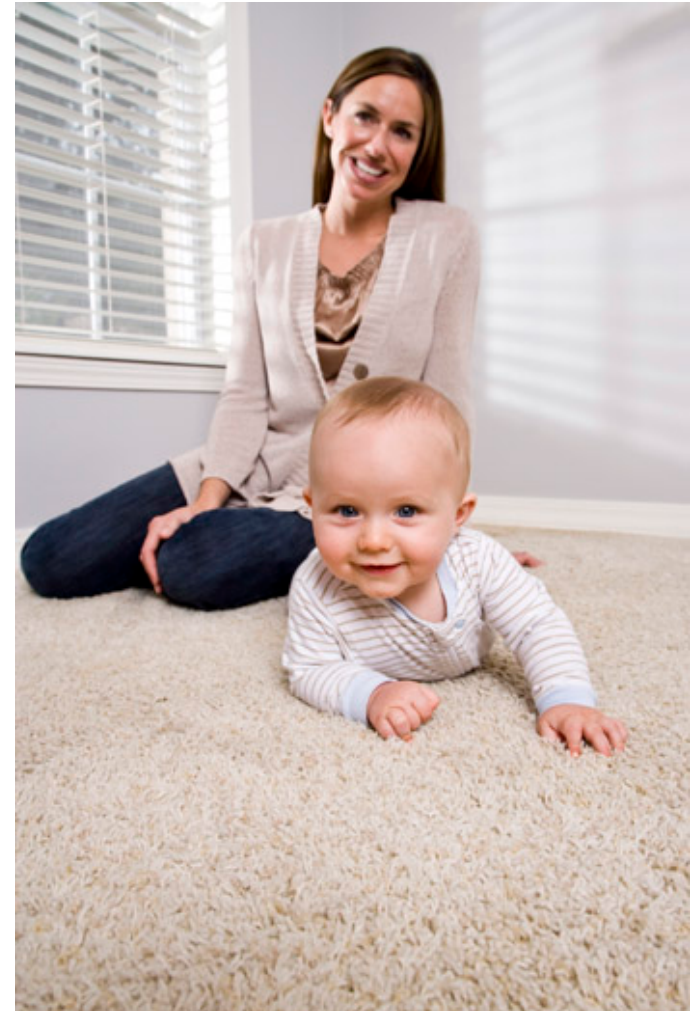
▣ Residential

- Nylon 6,
- Nylon 6, 6
- PET (Polyethylene Terephthalate)
- Polypropylene, Wool, other

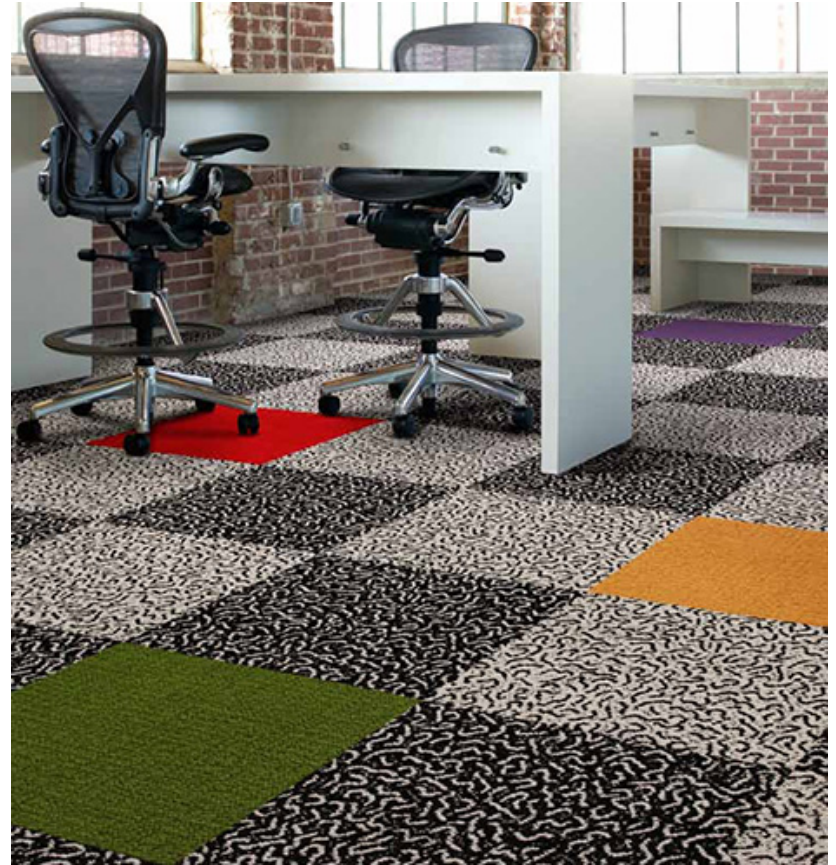
▣ Commercial Broadloom

▣ Carpet Tile

- PVC Backed
- Non-PVC Backed



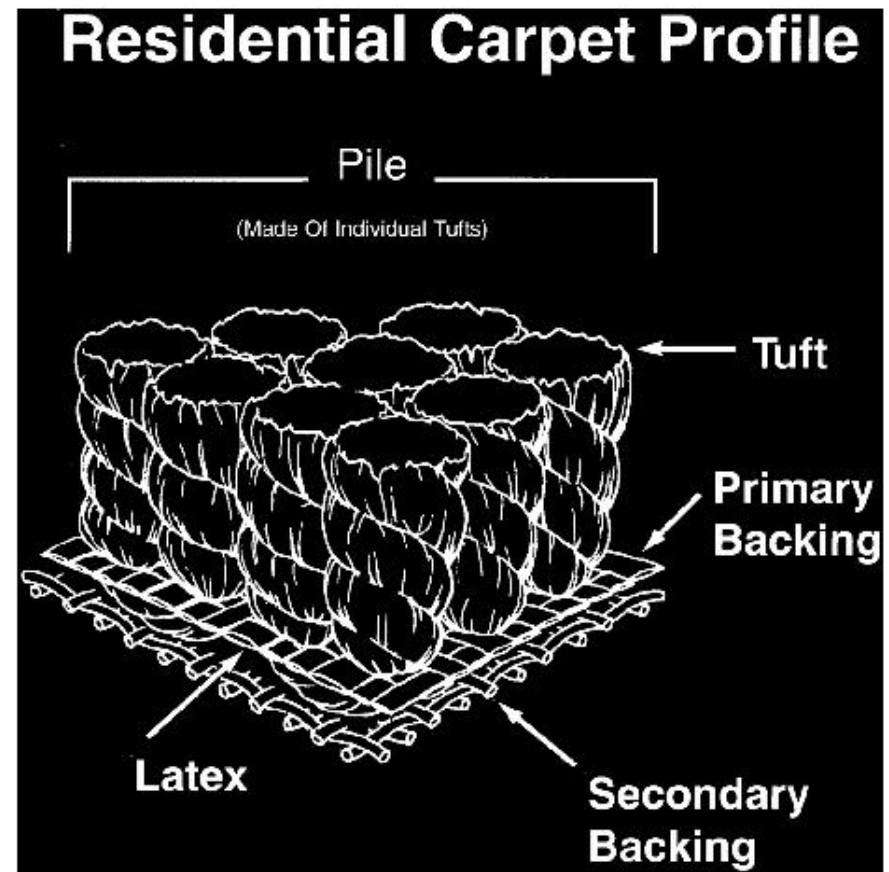
Commercial Broadloom & Carpet Tiles



Complexity of Options Depend on % of the Carpet Recycled

□ Residential Carpet:

- **22% face fiber**
- **28% U fibers**
- **32% calcium carbonate/limestone**
- **11% polypropylene**
- **7% latex**



Carpet Processing Options

- ❑ **Chemical Processing**
(e.g. Shaw Depolymerization Plant, Georgia. Formic Acid Dissolution Plant, Delaware)
- ❑ **Carpet cushion from recycled carpet (LA Fiber)**
- ❑ **Waste-to-Energy**
MSW and Carpet as Alternative Fuel (CAAF). GHG issues.
- ❑ **Resource Separation & Harvesting...**



Harvesting Carpet Resources

- **Presently no market for harvested PET fiber**
- **Most processors just shear nylon face fiber**
 - ✓ **Dispose of carcass (80%)**
 - ✓ **Or Waste-to-Energy**
- **Grind up used carpet, toss limestone in landfill, ship resources overseas (creating few CA jobs)**
- **Processors with low recycle % also waste CA carpet resources**



Harvesting all the Carpet Resources



Recycling Resources for
our Children's Future

The Carpet Recyclers

➤ Started as a collector...

“We can do better!”

Goals: Build first-of-its-kind carpet recycling facility capable of –

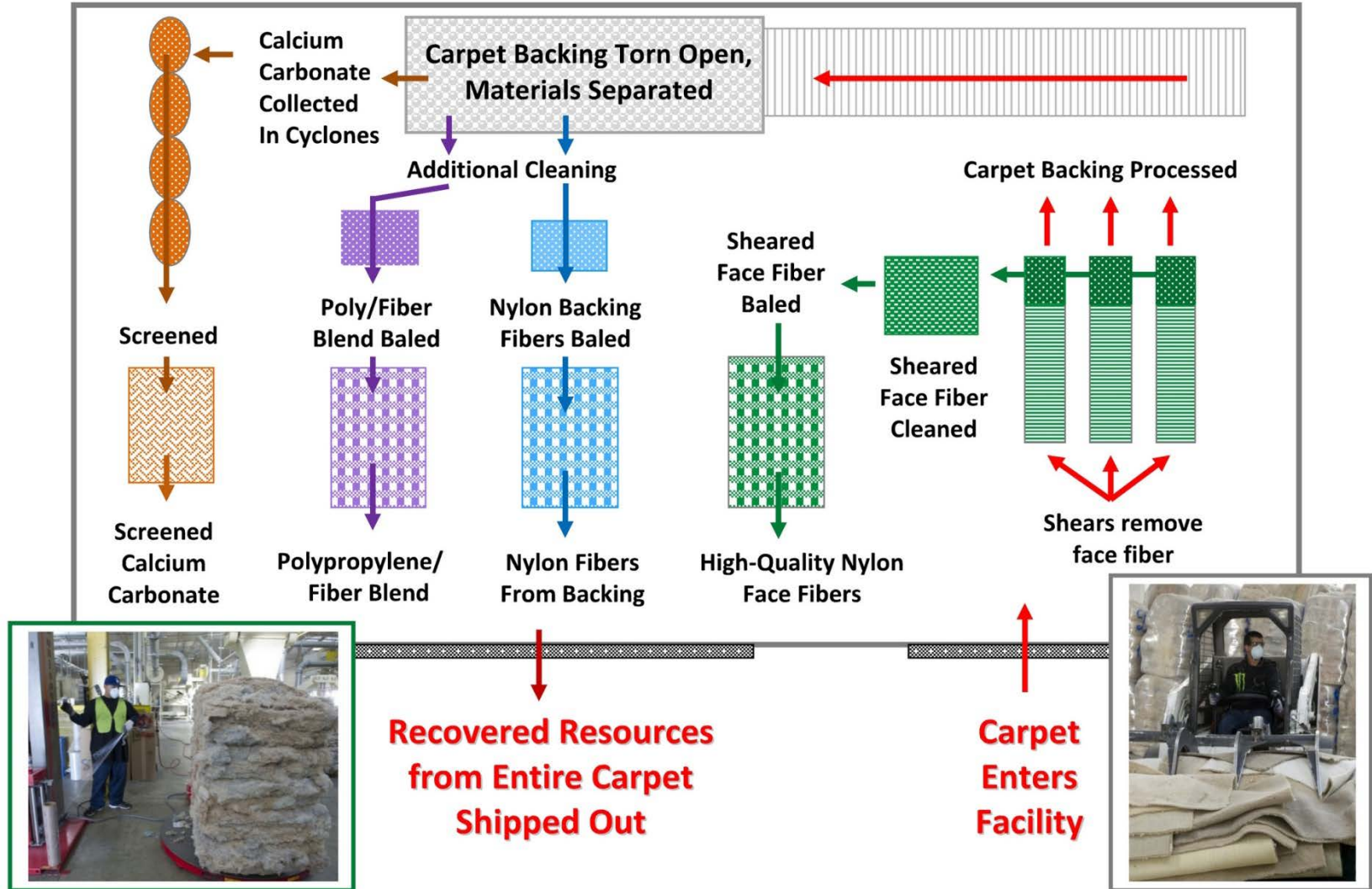
➤ **Separating all carpet components**

➤ **Harvest & recover the resources**

➤ **Send zero waste to landfill**

➤ **Create new green jobs.**

The Carpet Recyclers' Process



Products Produced

Face Fiber: Nylon 6 and 6,6
Less than 1% Ash



U Fibers: Nylon 6 and 6,6



Products Produced

Nylon/Polypropylene Blend



Limestone (Calcium Carbonate)



The Challenges of “Being First”

Or... How did a \$2.5 million estimate turn into \$6+ million cost?

- ✓ **Build a new type of facility...**
- ✓ **Using heavy, raw materials spread across the Western U.S.,**
- ✓ **Produce new products...**
- ✓ **Requiring new market creation**
- ✓ **During difficult economic times**



Collecting the Carpet: Sources

- **Carpet Retailers & Installers**
(trailer service & drop off locations)
- **Landfill and MRF collection centers**
- **Demolition Sites (primarily commercial carpet)**
- **Recycling centers & community collection**

Options limited because...



Collecting the Carpet: Challenges

- **Harvesting carpet resources require carpet to be clean and dry. Source segregated...**
- **Started collecting our own carpet, providing trailer services, operating collection center in Santa Fe Springs & Oakland. Now use...**



Independent Carpet Collectors (ICCs)

ICCs collect, prepare and ship to our So Cal processing facility

- Collect carpet using trailer service or drop centers
- Separate carpet into fiber type using \$18K analyzer
- Cut and stack sorted nylon carpet
- Dispose/WTE non-nylon carpet
- Ship prepared nylon carpet to us
- Paid by the pound (more green jobs created)

Green Waste Recovery in San Jose, our newest collection partner



Building the First Facility



- **Technology Selection**
- **Equipment Delivery:**
Expected Sept. 2010, not in full operation until June 2011
- **Separation not as advertised, additional equipment required**
- **Additional challenges in permitting due to new facility type e.g. Fire Department**

Finding Buyers for Harvested Products: Best and Highest Use



- **Carpet Backing Products:**
 - **Poly/nylon blend, material mix increases challenge**
 - **Calcium Carbonate, low cost increases difficulty**
 - **U-Fibers, limestone nodule lowers value**
- **Face Fiber – many suitors, highest quality in industry < .5% ash**

Partnership with Interface

CONFESSIONS OF A RADICAL INDUSTRIALIST

PROFITS, PEOPLE, PURPOSE—DOING
BUSINESS BY RESPECTING THE EARTH



RAY C. ANDERSON
with ROBIN WHITE



Product Sales, Recycling Rate +90%

- **Shearing and Carpet Backing Processing in full production Summer '11**
- **Buyers for all products not finalized until Feb '12**
- **Working on higher, U.S. uses**
- **Jan 2012: inventory of over 4 million lbs which is now gone.**
- **2013: Zero waste to landfill**
 - Bag house waste.**
 - Screened material from calcium carbonate processing.**



Financial Trials and Tribulations

Summary of Challenges:

- Late equipment delivery
- Product cross-contamination
- Permitting documentation
- Collection costs
- No market for PET fibers
- Long lead time to find buyers
- And, and, and...

ALL COSTING \$\$\$...



Funding

Original \$2.2 in capital costs

- GF Industries self-funded (credit access) and Wells Fargo Bank

Additional Funding:

- Could not qualify for RMDZ loan or EB-5 due to location
- Too early/too risky to attract equity financing
- California State-Guaranteed Loan
 - Nestor Correa (Pacific Coast Regional SBDC)
\$750,000 approved in Dec 2011. Funded by 21st bank in April 2012 (most used for payables)
Secured by equipment & owner's home
Lack of understanding of program by banks

Funding (continued)

AB 2398 – the reason we kept going...

- Signed Sept. 30 2010
- Funds begin to be collected in July 1, 2011
- First payment to The Carpet Recyclers Feb. 2012
- Paid on products shipped (2nd quarter 2012 first full payments)

Other Sources:

- Accounts Payable
- Revenue including C.O.D.
- Long-term supply agreements

Accomplishments

- **We survived (so far)**
- **Scaled up new technology on way to zero waste to landfills**
- **Added 3rd shift, 7 days/wk**
- **At 50 million #/year run rate, save 5 million gallons of oil**
- **Created 100+ green jobs**
- **Long-term supply agreements**
- **Named “Recycler of the Year” by Carpet America Recovery Effort (CARE)**
- **Poised for west-coast expansion**



Conclusion

- **Huge challenges overcome**
- **Limited support available from State of California**
- **Presently in discussions regarding equity financing & growth capital**
- **Plan to build additional facilities starting in Bay Area in RMDZ area**
- **Additional infrastructure needed to collect divert more carpet (75% plan) and ensure support of high % recycling facilities creating CA jobs.**



Questions?

Thank You for this Opportunity.

For more information:

TheCarpetRecyclers.com and GFIndustries.net

