

**Carpet Recycling Business Roundtable #2 – processing for end markets and use in manufacturing**  
**October 16, 2009**

**Notes**

**Participants:**

**Shirli Axelrod**, Seattle Public Utilities  
**Diane Barbacci**, Mohawk  
**Kris Beatty**, King County Solid Waste Division  
**Fred Beggs**, Shaw Contract Group  
**John Bradshaw**, Shaw Industries  
**Jerry Brownstein**, The Xetex Corporation  
**Sandra Brumbaugh**, Patcraft and Designweave Carpet  
**Vicki Bushnell**, Kitsap County Solid Waste  
**Jeff Callison**, Patcraft DesignWeave Carpet  
**Bill Capito**, Applied Thermoplastic Resource  
**Dee Cassell**, Texas Carpet Recycling  
**Julie Colehour**, Colehour+Cohen  
**Karen Cook**, Interface Americas, Inc.  
**Jackie Daniels**, Masland Contract  
**Frank Endrenyi**, Mohawk  
**Karl Englund**, Washington State Univ.  
**Sarah Fenner**, Division 9 Flooring  
**Paul Gibian**, Tandus  
**Terry Gillis**, Recovery One  
**Eun-Sook Goidell**, Full Circle Environmental  
**Ronald J. Greitzer**, Los Angeles Fiber  
**Preston Horne-Brine**, Fluxion Enterprises  
**Ernest Humphrey**, Mohawk Industries  
**Steven Jones**, Shaw Industries  
**Peter Klauser**, Eco Carpets  
**Debbie Landry**, Mohawk Industries

**Karen K. Leonas**, Washington State Univ.  
**Jay Loughran**, The Mohawk Group  
**Shannon McClelland**, Washington Dept. of Ecology  
**Don Messick**, West Coast Flooring  
**John Muzzy**, Georgia Institute of Technology  
**Eric Nelson**, InterfaceFLOR  
**Kris Painter**, Colorado Reclamation Services  
**Lynn Preston**, Tandus  
**Bob Reiss**, Reliance Carpet Cushion  
**Wyatt Rollins**, Shaw Industries  
**Lisa Sepanski**, King County Solid Waste Division  
**Jay Shepard**, Washington Dept. of Ecology  
**Ron Sherga**, Sher-Results LLC  
**Bill Smith**, Tacoma  
**Ron Smith**, Soex Textile Recycling USA  
**Sean Sonnett**, Contract Furnishings Mart  
**Susan Spuhler**, Intevac Photonics/DeltaNu  
**David Stitzhal**, Full Circle Environmental  
**Jeremy Stroop**, CARE  
**Julie Tanning**, Mannington  
**Marty Turpin**, Washington Floor Covering Association  
**Ken Way**, J+J/Invision  
**Kippen Westphal**, InterfaceFLOR  
**Greg Whitman**, The Mohawk Group

**Annotated Agenda:**

- 9:00-9:20 – Agenda overview and introductions
- 9:20-10:00 – Presentations on Processing for End-markets
  - Jeremy Stroop, Carpet America Recovery Effort (CARE)
  - Bob Reiss, Reliance Carpet Cushion
  - Other end products, processors/manufacturers using recovered carpet fiber

- 10:00-10:50 – Roundtable Question: “What needs to happen to advance end markets in the Northwest region?”  
Around the room input and group discussion ([see notes below](#))
- 10:50-11:00 – Wrap-up/next steps:
  - Meeting summary and attendee list will be sent to all invitees
  - Public agency procurement information sharing and facilitating; meeting October 16 afternoon with northwest regional procurement officials, and follow-up.
  - Workgroup will refer to Roundtable input and proceed during November with proposing tactics for local actions
  - Meeting materials, presentation slides from Roundtables, and presentation slides from recycling panel at Buildex Seattle Trade Show (Oct 14) will be posted on LinkUp Carpet pages, [www.kingcounty.gov/linkup](http://www.kingcounty.gov/linkup)
  - Seek additional venues/opportunities to share information (CARE has monthly Entrepreneur conference calls, annual Entrepreneur meeting and annual Conference in April in Santa Fe. [www.carpetrecovery.org](http://www.carpetrecovery.org))
  - Northwest participate in CARE 2010 national negotiations for carpet recovery
- 11:00-12:00 – Optional Networking Hour

**Input from attendees:**

**What needs to happen to advance end markets for recovered carpet fiber and the processing that supplies those markets particularly in the Northwest?**

- Need to make it easy for installers to bring their material somewhere; and more economical.
- InterfaceFlor is exploring what we consider the highest value end uses, turning nylon 6 and 6-6 into new fiber. Working with two mills. Backing being reused into building materials and other paths. The auto parts market is down a bit, but coming back recently.
- Forums like this to build awareness of end use markets are important.
- What are governments doing, and what else is happening around the nation so we don't reinvent a wheel? Several contributed answers:
  - Shirli Axelrod, Seattle Public Utilities, examples include efforts locally that we haven't found elsewhere, and a strong local recycling ethic:
    - “Buy-recycled” ordinances for local government, and public contracts mandating recycled content and recycling of carpet (since 2002);
    - Solid waste rate-setting and tipping fees favor recycling;
    - Local disposal restrictions/ bans are adopted in conjunction with infrastructure and markets for recycled materials;
    - Solid waste is taxed but recycling is not;

- Local elected officials set policies, direct agencies to increase incentives, and performance standards in place or in the works for facilities handling materials such as carpet; agencies looking at jurisdiction to keep out asbestos contamination;
    - Local permit fee and provisions change recently to motivate deconstruction and salvage rather than demolition and landfilling of building materials;
    - Regional workgroups and strategizing, recognizing market and population areas and not fragmenting efforts.
  - Kris Beatty described the infrastructure and market development services/experiences of the King County LinkUp program she manages – [www.kingcounty.gov/linkup](http://www.kingcounty.gov/linkup).
  - Jeremy Stroop, CARE, described some activities around the country:
    - Polymers Center of Excellence;
    - Rochester Pollution Institute;
    - Northeast Recycling Council (NERC);
    - Florida SWIX;
    - Georgia Tech;
    - CA Integrated Waste Management Board;
    - EPA Regions and HQ
  - Karen Leonas, now at WA State University, got funding through a State of Georgia program (TIP and Carpet and Rug Institute). Industry involvement was part of these efforts by design.
  - WA Technology Center does tech transfer from public universities.
  - Karl Englund, WA State University, Composite Materials and Engineering Center is similar to the Polymers Center of Excellence. Worked with many companies.
  - Project with Georgia Tech and Joyce Cooper University of Washington. Developing techno-economic case studies, including extrusion molding for a wide variety of projects.
  - Jay Shepard, WA Department of Ecology, notes that the next WA state carpet bid spec will require NSF 140 Gold. (Jeremy notes: this is a multi-attribute requirement, but its recycled-content requirement is for post-consumer material in general, not necessarily post-consumer carpet.)
- Some participants recommend consider mandating recovery on a local level; others recommend against bans.
- The collection system is somewhat in place through on-site pick-up, based on companies such as Recovery 1 (Tacoma), Pacific Urethane (Kent), ECR (Portland). Reverse haul trucking can get certain material to a recycler (such as Evergreen in Georgia). Regarding downcycling versus upcycling, in Terry's experience, markets often start at a low end of the value chain; and over time values can rise and new processing opportunities arise. Carpet-to-carpet may not happen in the NW, but there can be many other products with equal value, and less environmental impact.

- Supply of recovered carpet is not an issue, in CARE's view: there are 18 pounds of carpet per person generated in US metro regions. Processing and pre-processing facilities are the key needs. Process into products transparent to the market: what resin, ash content, other attributes. Look locally and see who could use these resins, and then support them through tax breaks and other supports. Govt. procurement is also critical support. CARE discourages landfill bans.
- Companies now recycle carpet into underlay and padding. Ron Smith, SOEX-West, and Bob Reiss, Reliance EcoCushion).
- Xextex owner Jerry Brownstein has background in textile recycling. Insulation is worth exploring as a market.
- Vinyl back carpet recycled in-house by Tandus (Lynn Preston). Full carpet turned into backing for new carpet.
- For the NW, need to look at export to China and elsewhere. Also look at real end-users, such as auto maker, Home Depot, WalMart. This will help expand markets
- Need to make inventory for how available products match with technology, and how does that match with the NW profile. To use the enormous supply, we must look outside traditional, current uses for this plastic product.
- End markets could be advanced by input and R&D from university systems.
- University researcher Karen Leonas, worked with CRI in the past. Industry and academic partnerships can yield results. Resources needed include: industry contacts, assistance along the way, financial support, government mandates for recycling.
- University researcher and lab facility; Karl Englund with WSU is working with recycled materials, including carpet. Do we recycle for its own sake, or in the larger context of life cycle assessments (LCA's) and energy use? There are technologies with low energy inputs, such as insulation and landscape retaining. These are low value, but a good start. Financing is needed.
- LCA data from Evergreen recycling plant shows that even with transporting to Georgia it is better to recycle than to dispose of carpet. Shaw is getting a lot of N6 out of the Northwest now. But there need to be processing and outlets in the Northwest.
- WA State Floor Covering Association is able to play a key role in education and getting messaging out. (Marty Turpin, WSFA)
- Need to get word out to flooring contractors and others, and figure out how to message the information, and provide guidance for folks taking out carpet. (Sean Sonnett, Contract Furnishings Mart)
- Architects and designers should get on board to help identify products. (Sara Fenner, Division 9 Flooring)

- There are practical business incentives available for industry interested in siting here. There should be a consortium to facilitate this, with economic development officials involved. Preston Horne-Brine mentioned that industrial revenue bond financing is available for big projects, and that Shorebank Pacific and Cascadia Revolving Loan Fund are available for smaller projects.
- The issue is not supply or collection, it is what you are going to do with all the materials once you get it. That will take collaboration.
- Bill Capito, Applied Thermoplastics, says we can build a viable product out of the material out there. The price for virgin material has an impact on cost, though. Also it appears that there's little government push to mandate use of recycled products.
- Recycling is cheaper than disposal in most instances (with our tipping fees), though it's not free. Recycling won't yet pay for itself; costs to get material processed and ready for market.
- Waste is a financial and environmental burden, so there is incentive and opportunity to take action. The government needs to establish that this is a priority for them by creating purchasing demand for all products with post-consumer content. Also they should acknowledge the burden on them by shifting financial signal to move toward recovery and re-processing. Industry will then step up to the plate and establish manufacturing in this region.
- What is the industry perspective on product stewardship program given EPA findings on LCA impacts. Jeremy described CARE history, the 2002 Memorandum of Understanding and 2012 diversion goals, etc., and interest in more procurement by government of products containing recovered carpet fiber.
- Supply may not be an issue, and yet getting that supply out of suburban areas can be tricky for a processor. Are installers using these services to the degree they could? For example, with drywall in the past, no one would use the recycle drop-off boxes provided by Kitsap County (WA), and the program ended.
- We are great at recycling in this area, but we don't have a bin for carpet at a transfer station. We need to make it easy and cost-competitive for the installers.
- Kris Beatty noted that old transfer stations often don't have space for additional bins, but the new Shoreline transfer station has more space to allow more options.
- Transfer station bins may not be appropriate, even if they appear convenient, because asbestos in loads of building materials is still a big concern. Unmonitored collection will result in contaminated materials being dropped off, based on experience.
- Suggestions from Jeremy Stroop, CARE: Centralize drop-off by dealer or installer, and work it into the cost structure for carpet jobs. This can help control and maintain cleanliness. The receiver will have a vested interest in the quality of the product, and can tag and track the loads.

Besides the above input, there were a few other questions asked. If the askers feel these were not answered, please let us know and we will direct them to someone to be addressed further.

1. Question for Invista, Interface and Mohawk, from Kris Painter, Colorado Reclamation Services, about volumes they can accept for recycling. Frank Endrenyi from Mohawk answered that it depends on what products they can make—that they are increasing the volume.
2. Question from Susan Spuhler, Intevac Photonics, about why governments aren't more involved in funding recycling programs.