

A Story of Carpet Recycling



October 2014





Chapter I, 2001-2010

A commitment to carpet recycling was made by carpet manufacturers and various sellers in an agreement with governments. Development of carpet recycling was slow but appeared to be growing – becoming more widely available – and presented an opportunity to establish carpet recycling in Washington, getting carpet out of the garbage.

2001 Memorandum of Understanding

"The Carpet & Rug Institute, on behalf of ...92% of carpet manufacturing in the US, and [Iowa, Wisconsin, Minnesota, and US EPA]...are entering into this...Memorandum of...to increase the recycling and reuse of post-consumer carpet..."

The undersigned support the outcomes described above and agree to participate in implementing these outcomes.


Werner Braun, President
The Carpet and Rug Institute 1/8/01

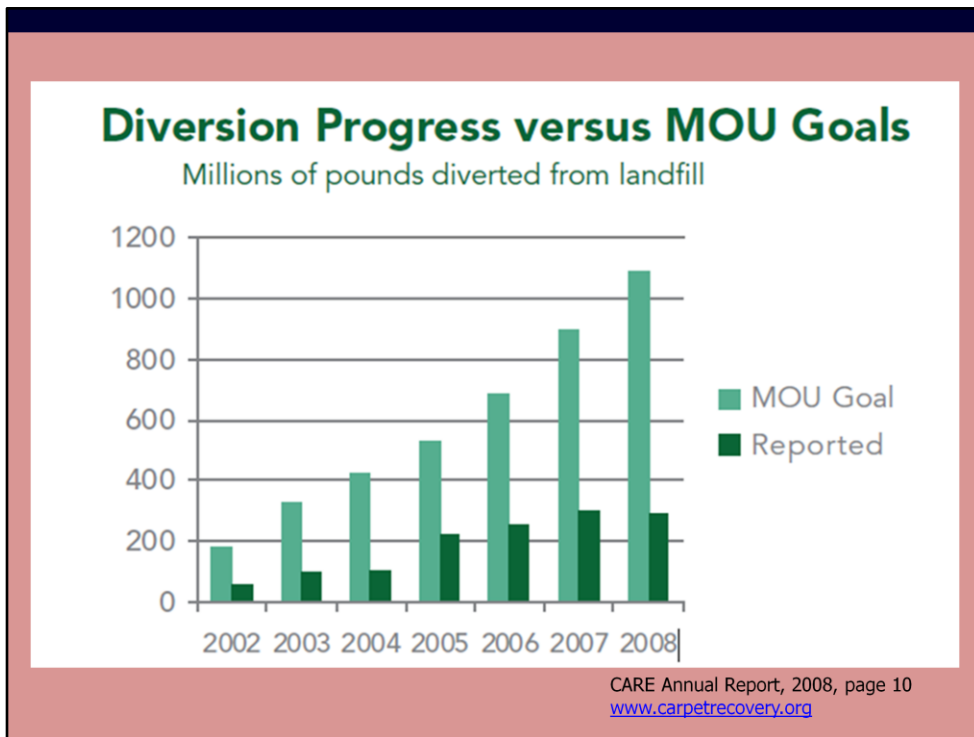

Sherry K. Entzler
Representative of State Governmental
Entities 1/9/2001

There was reason for people involved with carpet -- carpet owners, sellers, installers, green builders and remodelers, solid waste companies, government agencies, and environmental and climate groups -- to be hopeful for leadership from manufacturers, because nylon markets were strong; there were advances in separation technologies, and there was an increase in entrepreneurial activity around carpet recycling with additional businesses entering the field.

The 2001 Memorandum of Understanding for Carpet Stewardship (MOU) was an agreement between carpet manufacturers represented by the Carpet & Rug Institute, the U.S. EPA, and multiple states, including Washington. It led to national recycling goals, model procurement guidelines for governments, and the formation of CARE, funded primarily by the carpet industry.



As time passed, however, there was disappointment about the slow pace of progress toward MOU diversion and recycling goals.



(CARE Annual Report, 2008, page 10)

The goal for carpet diversion from landfill was 40 percent by 2012, and the recycling goal was 25 percent recycling by 2012. Each year, recycling goals under the MOU were not achieved though diversion and recycling increased modestly.



<http://www.wellmaner.com/assets/files/Certifications/Ford%20using%20EcoLon%20nylon%20resin%20from%20recycled%20carpet%20for%20cylinder%20head%20covers.pdf>

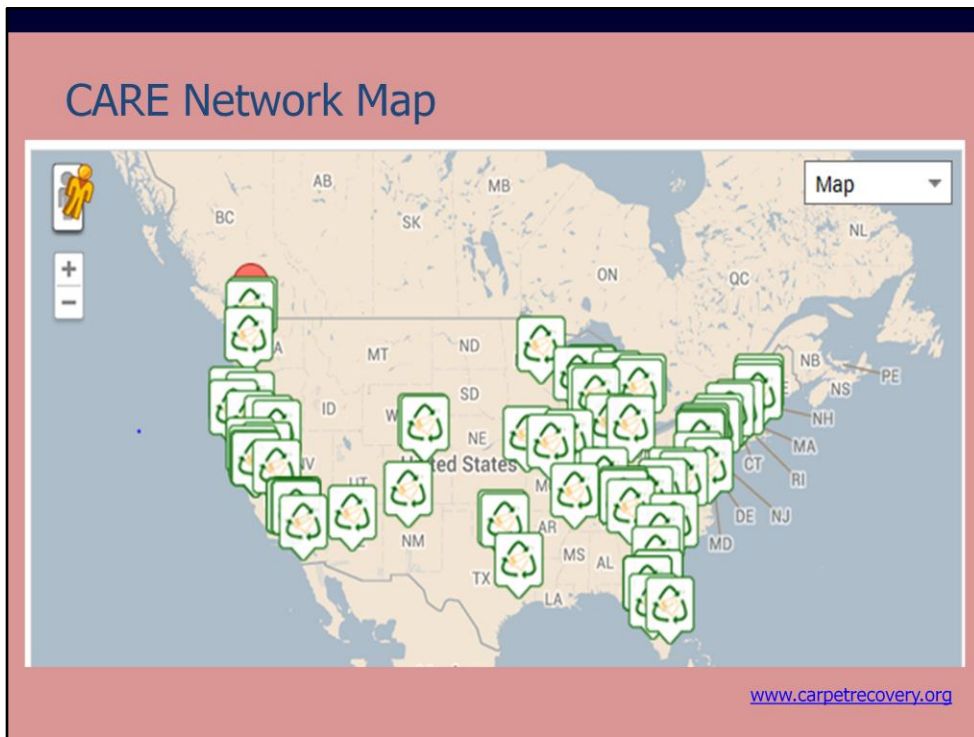
" Ford is using EcoLon, a nylon resin made from 100% recycled carpet,... [uses Nylon 6,6] to make the cylinder head covers on Ford Fusion and Escape...[and] on the 5.0-liter Mustang and F-150 [engines]."



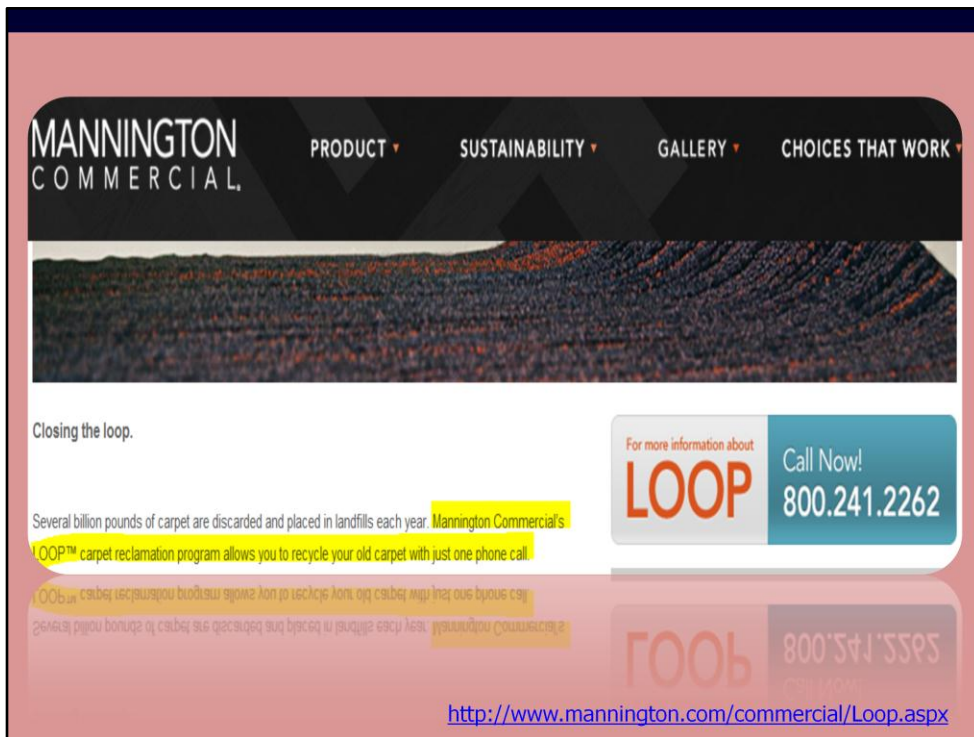
<http://www.autoevolution.com/news/ford-uses-recycled-carpet-for-cylinder-head-covers-33989.html>
» EcoLon Material from Wellman Engineering Resins

Carpet processing technology was developing, but yielded low amounts of economically marketable materials from each carpet processed (25-30% by weight), with the remainder landfilled or burned.

In the early years, markets were available for nylon 6, but limited for nylon 6,6 and extremely limited or non-existent for polypropylene backing and calcium carbonate . PET and PTT and other fiber were rarely mentioned. Nylon 6,6 markets improved, but markets for other materials did not.



Businesses in the Pacific Northwest joined CARE and took part in the carpet recycling value chain by collecting and consolidating carpet for processing elsewhere in the country. Entrepreneurs nationwide invested in equipment and facilities changes.



Green building and more-widespread application of LEED standards became more mainstream, increasing the demand by builders and property owners for recyclability and recycling in order for them to obtain LEED or other “points”.

Selling products as “green” became more compelling for manufacturers.

Carpet manufacturers advertised their recycling services with hardly an exception. The example in the slide says:

“Mannington’s Commercial LOOP carpet reclamation program allows you to recycle your old carpet with just one phone call.”

The State of Washington, Seattle and King County changed their flooring contracts to require carpet recovery and recycled-content in carpet. But “specifiers” didn’t realize PET carpet would be non-recyclable, and didn’t specify recycled content originating from carpet.

NW Carpet Recycling Project Business Meeting



Starting in 2008, Seattle and King County began working with stakeholders to support development of processing capacity and markets in our region.

Carpet processors open



<http://media.komonews.com/images/Recycling+Center+Tacoma.2.jpg>

Additional carpet processors began to open in the Northwest (Carpet Processing & Recycling/Recovery 1, The Carpet Collectors, Again) and in California. Local recycler, Recovery 1, began R&D of separation technology.

California AB2398, state-mandated carpet stewardship supported by CRI after a compromise, was signed into law in 2010. The funding method is based on incentive payments to processors and end-users. The law's passage reflected increased interest in product stewardship from environmental groups and solid waste agencies.



Chapter II, 2010-2014

<http://www.servicehunter.com/assets//carpet-waiting-to-be-recycled.jpg>

There were additional efforts to increase recycling of carpet and extend the national agreement.

Processors started to struggle and close by 2013, however, due to low yield from processing, receiving more PET and other non-recyclable carpet, and lack of adequate end markets for recovered materials other than nylon.

Local meetings among carpet interests:



Over this time, new MOU negotiations started but stalled; legislation took more of the stage; optimism turned into concern, disappointment and frustration over lack of carpet recycling progress and the crisis from PET carpet being not economical to recycle; yet hopefulness remained that better processing methods will come from local and other R&D.



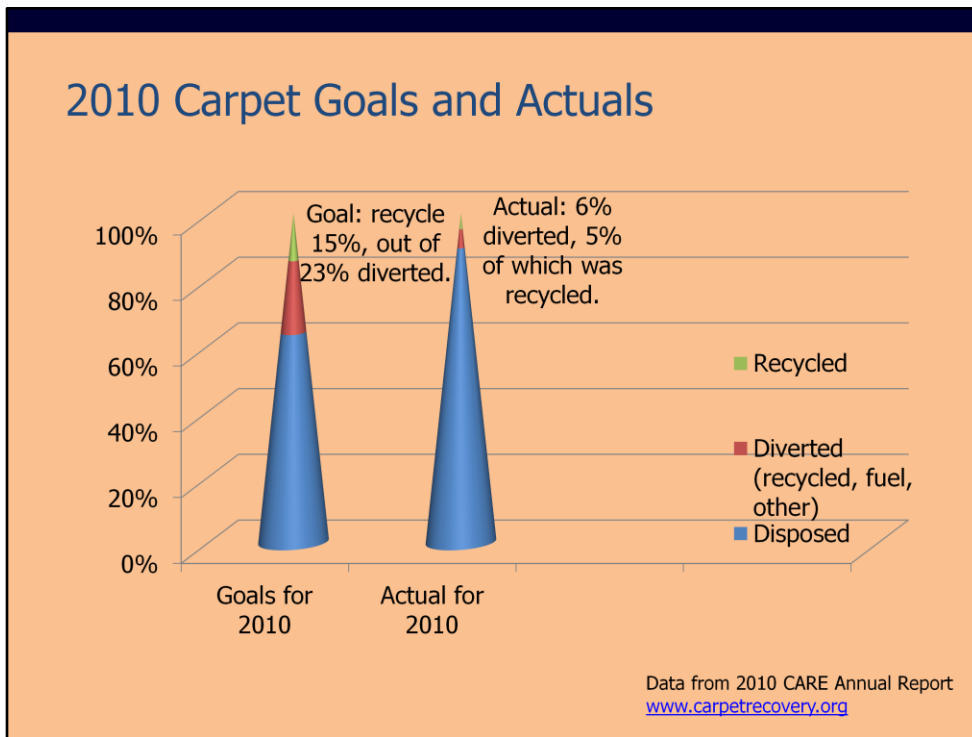
Dear Carpet Industry Stakeholder,

Pursuant to the terms set forth in
...the [2001] MOU, stakeholders
agreed to reconvene in 2010 to set
goals for 2012-22...

I am writing to invite you to
participate in this process....

Sincerely, Frank Hurd, CARE

In 2010, CARE invited stakeholders, including Washington State and City of Seattle, to begin negotiations for a new MOU, as prescribed in the 2001 MOU.



Carpet Recycling Goals and Actuals

2010 Landfill Diversion Goal: 23.0%

2010 Actual Landfill Diversion: 5.6%

2010 Carpet Recycling Goal: 15.0% (903M lbs or 451.5K tons)

2010 Actual Recycling: 4.5% (337.5M lbs or 168.75K tons)

Manufacturers increasingly use PET fiber from recycled plastic bottles and abundant byproducts of fracking, because it's less expensive than nylon and the carpet product appeals to markets for less-expensive carpet. PET is the fastest growing fiber category for use in carpet, but PET fiber from carpet cannot compete with other PET. Carpet PET, PTT, and blended fiber must be disposed as garbage. Carpet design did not improve to become more recyclable, but instead moved in the opposite direction.

Carpet processing technology advancement slowed and newer technologies did not become widely available. There continued to be low yield of recovered materials from carpet.

Other than nylon, markets for recovered materials from carpet have had little growth and are significantly limited or non-existent.

"The carpet industry must be clear:
requir[ing] the industry to fund
...collection and sortation centers
across the USA is not possible."



Partway through the MOU process, CRI announced it would not support funding carpet recycling in states other than California. The MOU negotiation then stalemated and dissolved in 2011 over the issue of sustainable funding.

Public policy and legislative activity grew elsewhere:

Passed : carpet recycling study bill in Delaware
established committee to study carpet recycling;
Seattle adopted landfill ban.

Introduced: carpet stewardship bills were active in
Washington, Connecticut, New York, Minnesota,
Illinois (and the Illinois bill penalizes non-
recyclable content). Did not pass in Washington.

"No End to Housing Bust in 'Carpet Capital of the World'" [Dalton, GA]

Kim Severson,
NY Times, August 20 2012

"...This stretch of carpet mills and floor covering outlets...between Atlanta and Chattanooga lost 4,600 jobs...from June 2011 to June 2012..."

The town's unemployment rate, once about 4 percent, nearly doubled in a blink...[to] more than 12 percent..."



Business development still held promise locally, although the recession after 2008 and through 2012 unquestionably hit the recycling industry, the building industry, and the carpet industry, here and around the U.S.

CalRecycle and CARE start implementing AB2398 state-mandated carpet stewardship in 2011. CARE is the stewardship organization.

Results have been mixed: recycling increased significantly in California under the program and the 2012 goal was met, but the CARE Annual Report to CalRecycle for 2013 has been found non-compliant because "it does not meet the minimum requirements per regulations and because it is not clear that the Program is making continuous and meaningful improvement."

<http://www.calrecycle.ca.gov/Actions/Documents%5c124%5c20142014%5c183%5cRequest%20for%20Approval%20-%20signed.pdf>

<http://www.calrecycle.ca.gov/Actions/PublicNoticeDetail.aspx?id=1306&aiid=1183>



"Our most recent breakthrough is Continuum™, a patent-pending proprietary process that creates higher-quality PET carpet by using only superior, FDA-approved PET bottle resin. The result is a stronger, more resilient carpet that contains up to 100 percent recycled content from PET bottles.

Continuum not only improves our competitive power in the \$1.5-billion-plus polyester carpet market, but also ensures that we continue to fully utilize our manufacturing infrastructure that can recycle approximately 5 billion bottles on an annualized basis.

Similar to SmartStrand®, our investment in innovation has once again produced a win for our business and a win for the environment."

MOHAWK 2013 Corporate Sustainability Report, page 3
http://www.corporatereport.com/reportbuilder/mohawk/2013/sr/MHK-025_2013CRSR_12.0.pdf

Carpet mills' sustainable product claims include recycled content from plastic bottles, but carpet made from plastic bottles is not recyclable. Stain coatings and other chemicals not well addressed.

Carpet manufacturing changed, including millions invested in new mills using PET fiber, in ways that spelled failure for several carpet recycler/processors, and is this year characterized as a crisis by CARE. Due to the increasing amounts of non-recyclable carpet (including PET) they are receiving, processors across the country begin to struggle to stay in business, and some, including one in the Pacific NW (The Carpet Collectors) and two in California, close up shop. Processors engage manufacturers to address the issue.

The only product made with
recovered PET carpet fiber:



<http://reliancecarpetcushion.com/index.php>

QUOTE FROM "FLOOR DAILY"

http://www.floordaily.net/FloorFocus/Builder_market_CARE_recycling_Jack_Mishkin_St.aspx

"...a new elephant in the room that's clogging up the system for the collector network, and it's PET carpet. Much like nylon 6,6 several years ago, no one is willing to pay for used PET carpet because at this point there is a limited high-value use for its components.

Ron Greitzer at LA Fibers in Los Angeles is able to take some of it and convert it into carpet pad, and there is value for it as a fuel source (waste-to-energy) but today the recycling economics for PET carpet don't offset the cost of collecting it.

To make matters worse, the use of PET carpet has been growing exponentially in the past several years, so the collectors have far more than they can handle.

Not only has PET grown from 10% (in weight) of the total carpet fiber used in the industry to 40% in the last decade, many of the markets that use PET carpet (i.e. rental apartments) have a faster turnover, so it ends up in the waste stream sooner."

"The carpet reclamation industry is drowning in PET carpet...
If something isn't done...by the time that carpet is ready to be recycled there won't be a reclamation industry around to do it."

— Kemp Harr, FloorDaily



Kemp Harr, "FloorDaily:" "the carpet reclamation industry is drowning in PET carpet.

Not only do collectors end up paying to get rid of it, but they also make less money because less of what they collect is nylon.

It's a problem that is anticipated to get worse in the coming years, as today's volumes of manufactured polyester carpet come to the end of their useful lives.

But if something isn't done—if end use markets aren't developed—long before then, by the time that carpet is ready to be recycled there won't be a reclamation industry around to do it."

The CARE Annual Conference was held in Seattle in May 2014. Negotiations between manufacturers and processors about how to deal with the PET crisis were announced along with the parties' agreement not to comment about them. No information has been released since.

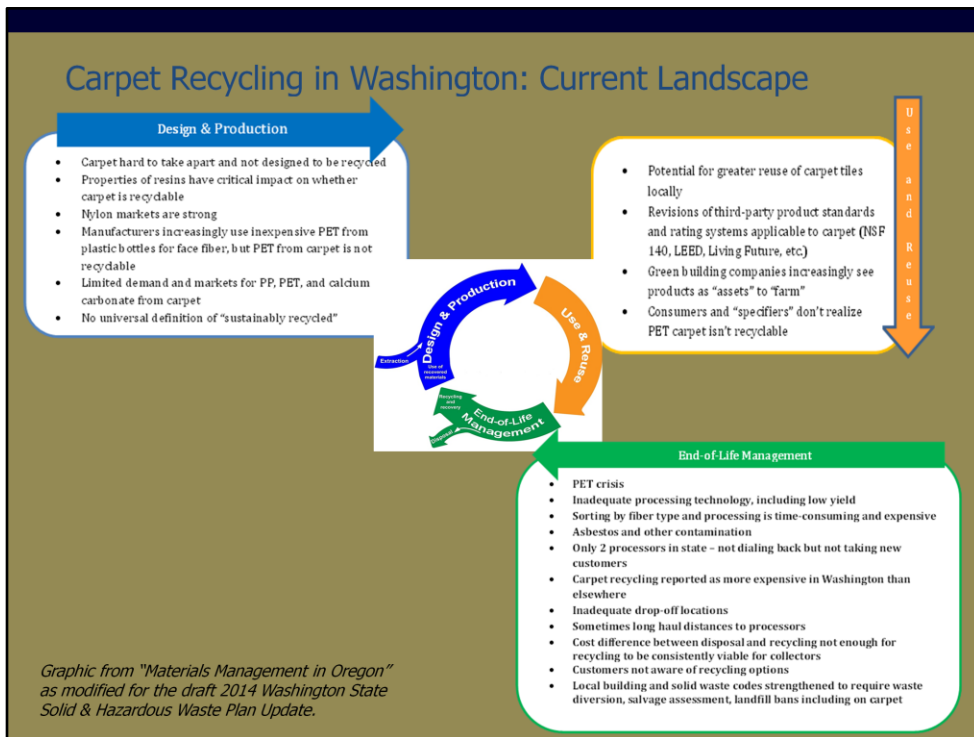
The Product Stewardship Institute and Connecticut Department of Energy and Environmental Protection held a National- Regional Dialogue on Carpet Stewardship in 2014. Elements of a stewardship bill were discussed. States, local governments, recyclers, non-profits, and CARE participated. CRI declined to participate.

Chapter III, 2015 and forward...



The carpet recycling situation has changed dramatically in the past couple of years. Many of the things we did at first to advance carpet recycling in the past don't work going forward.

During the 2014 interviews and on-line survey, we encouraged people to speak about carpet recycling based on their own experiences. Installers told about the challenges of finding convenient drop-off locations for carpet they removed, processors talked about marketing the materials generated from processing carpet, and so on.



This slide provides a tool we propose to use to put all the carpet recycling system pieces together to see the whole picture. For each of the “chasing arrows” on this handout, a list briefly describes the current landscape for carpet recycling related to that arrow. Most were described in other sections of this PowerPoint and are included in the Interview Summary and Online Survey Report documents.

Looking at the whole system this way reminds us that different parts of a recycling system interconnect and relate to each other. While we list issues specific to each arrow, they connect with and impact the rest of the system. Here are a few examples:

- The effectiveness of processing technology will influence the quantity and quality of materials that can be used as feedstock for industry.
- Demand for materials from industry will impact the ability of processors to market the carpet-derived commodities and for processors to be financially viable.
- Convenient collection systems are critical. However, the best collection system will be irrelevant if processing is uneconomical and end markets aren't present.

As we move into the next part of the agenda, this graphic can help inform our exploration of next steps to increase carpet recycling in Washington.