CARPETAMERICARECOVERYEFFORT

Developing market-based solutions for the recycling and reuse of post-consumer carpet

Annual Report

2005

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Developing market-based solutions for the recycling and reuse of post-consumer carpet

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Message from Frank Hurd, Board Chairman

The year 2005 was an exciting year for CARE. We have exceeded our expectation for diversion of carpet from landfills. In 2006 we are on the verge of expansive growth. The numbers you will see in this report are a clear indication we are heading in the right direction. I am more confident than ever we will meet our MOU targets, and we may exceed them.

Why the optimism? We have the beginning of a national collection system with StarNet setting up a collection network for their dealers. Shaw's purchase of Honeywell's portion of Evergreen is a significant boost for carpet recycling of carpet back into carpet. After the setbacks due to the Polyamid 2000 closing, LA Fiber recycled over 100M pounds last year, and its only obstacle for future growth is finding sufficient feedstock. Our entrepreneur base continues to expand. The entrepreneur meeting held last November was a tremendous success. The CARE Board of Directors is more energized than ever. Interest is up everywhere!

Energy prices make recycling even more attractive. Post-industrial carpet waste is becoming scarcer as industry continues to reduce the amount it generates and find other higher value uses for what they do generate. This makes post-consumer carpet a valuable commodity.

This is our second trip to Callaway Gardens' LEED certified conference center, and we expect this conference to be the largest ever. Once again there will be a vast amount of information to share, but this year we have built in some time for people to absorb the content and to also enjoy the beauty of Callaway Gardens. We will highlight a CARE "Person of the Year" and a "Recycler of the Year." Sponsorship is critical to CARE being able to accomplish its goals, and I can't say enough about this year's sponsors. They continue to make it possible for CARE to operate. The annual conference sponsors have been equally generous. A special thanks to all of them. They are the reason CARE is on a sound financial basis.

CARE will continue to be a good steward of these resources and make the best use of its limited resources. This upcoming year we want to use our scarce resources to find ways to directly help entrepreneurs market their products. We have engaged a consultant to help us find the best vehicles to connect with state procurement officers in the CARE process. We also have hired a grant writer to find alternative avenues of funding for CARE. Neither of these initiatives is a short-term undertaking.

Bob Peoples, our Executive Director, continues to do an amazing job for CARE, and I am happy to announce we have finally gotten him some help by hiring Jeremy Stroop who has already proven to be invaluable to CARE and Bob. He is an outstanding addition to the CARE team. Of course, any one who has

anything to do with CARE knows Linda Harrington. Linda's administrative skills are the grease that makes CARE run. We can't thank her enough. James Beach is another member of CRI who provides tireless support in the area of communication and is the one who gets our CARE newsletters out in a timely fashion.

As always, I can't thank my fellow Board members enough for their tireless efforts. Without their dedication to finding market-based solutions to land fill diversion of post-consumer carpet, this effort would not be possible.

As I said earlier, I am optimistic and excited about the future of CARE. I think the foundation is laid, and we are on a strong growth path. As you read this report, you will see we are making great progress, even if it is never as fast as some would like. There are too many exciting things taking place to not be excited. The growth of PCC landfill diversion is starting on its path of exponential growth. Year five, the half way point on our journey, is going to be a pivotal year for CARE. One where I firmly believe we will cast all doubts aside about our ability to meet the optimistic targets of the MOU.

Once again my sincere thanks to all who are contributing to the success of CARE.

Frank K. Hurd, Chairman, Board of Directors, CARE

Message from Robert Peoples PhD, Executive Director

The mission of CARE is to keep old carpet out of landfills. It is a mission that has several assumptions behind it – that the carpet industry is motivated to make this happen because it is the right thing to do for the future of the industry as well as an environmentally sound decision. Another assumption is that there are ways to keep carpet out of landfills that have far-reaching effects for the dozens of entrepreneurs that have sprung from this effort to create new products and a new industry. CARE in its infancy, just three years from filing as a non-profit corporation, has connected the dots, and it is succeeding at its mission.

Relationships are developing and strengthening that will continue to drive the mission; not because we say so, but because market forces demand it. In the past year we have seen a step-change in carpet reclamation. The number of inquiries and new entrants into this nascent industry has taken a quantum jump. We are at the cusp of several new and significant developments that will make 2006 even more exciting than 2005 was.

A look at 2005 tells a story of a vision that has come alive. Those who know me know I have a favorite saying, “Success is perseverance for one more minute.” It looks like our perseverance is paying off. Not only are we reporting an increase of 100% for 2005 over 2004, but we now can see a path to demand in 2007 that adds an additional need for more than 400 million pounds of old carpet. I am forecasting another increase of greater than 100% for 2006.

Where will this demand come from? NYCORE will be bringing a second plant on-line in the summer of 2006 with a third plant in design for the northeastern. A major composite lumber company will have a new plant on-line in late 2006 demanding 60 million pounds of used carpet. The Evergreen demand for nylon 6 will be 100 million pounds. Infiltrator Systems Inc. implemented a major expansion in 2005 that demands more polypropylene. Finally, the demand for nylon 66, a linchpin in all of our efforts, has now surfaced that will create a demand in excess of 200 million pounds going forward. So, dig into the 2005 report for all the exciting details.

Last year I introduced the S Curve concept. This year I am pleased to report we are on targeted projections needed to insure our progress along this realistic growth curve. As our survey becomes more sophisticated under the watchful eye of Weston Solutions, we also see our recycling base is growing as forecast last year. Of course, the major announcement by Shaw Industries of their plans to restart the Evergreen Nylon Recycling facility is a big boost to our efforts. We have been told collections will commence this year.

In 2005 we added many new sponsors and are now beginning to see our CARE support base expand as the value to both the equipment supply chain and end

users is now being realized. We also announced two major partnerships. The first was with Tricycle Inc. As a Sustainable Leadership Sponsor, Tricycle made a dual commitment to CARE. First, Tricycle made a monetary contribution to CARE. There is also a sweat equity contribution. Tricycle worked with CARE to redesign our award-winning webpage. By the time you read this report, the new site will be fully operational, so visit the site and tell us what you think: www.carpetrecovery.org.

We also announced a partnership with StarNet, a commercial flooring marketing cooperative. StarNet became a Corporate Sponsor of CARE and a sponsor of both our Annual Meeting and our Entrepreneur meeting. In return, CARE is working closely with StarNet member companies to help put in place a reclamation program and support dealer education. You'll hear more about this partnership at the conference.

CARE held its second Entrepreneur meeting again in Florida in 2005. More than 40 participants turned out for a lively session. Perhaps more importantly, about 50% of those in attendance were new to CARE since the May 2005 meeting.

Crude oil prices continue to maintain elevated levels, and no one expects them to drop any time soon. As a result, manufacturers are beginning to realize that processed old carpet is becoming a reliable feedstock in terms of availability, quality and price. This is an autocatalytic process, and once it begins to take off, we will have reached the tipping point. I continue to expect 2006 and 2007 to be the critical period. *Ultimately, the key to success will be creating demand for products (both carpet and non-carpet) that contain post-consumer recycled content derived from post-consumer carpet.* Our procurement project to engage the state and federal procurement agencies is another step in creating that demand.

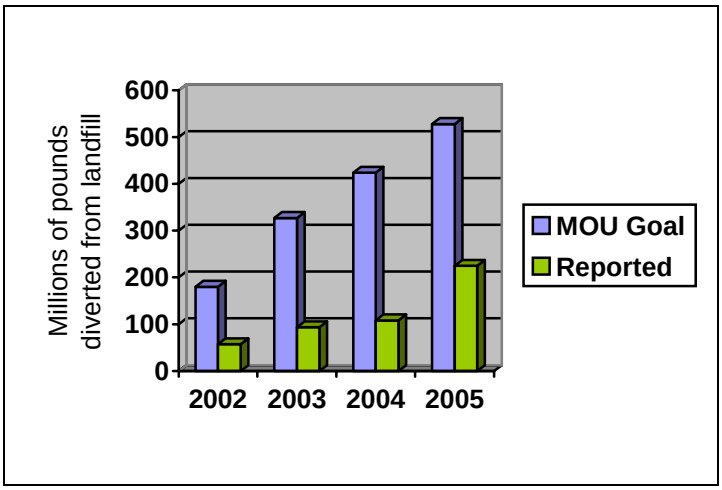
As in any endeavor of this magnitude, it takes a team effort. I would like to extend my personal thanks to all the entrepreneurs who are dedicated to making money via recycling of old carpet. It is a privilege to work with you and I learn something new everyday – how exciting! Also, thanks to the CRI staff, in particular Linda Harrington and James Beach. I would like to especially say thanks to a great Board of Directors who makes my job easy. We are tackling tough challenges with a true spirit of cooperation that can only mean one thing – we will achieve our goal! I remain highly encouraged by the potential we command and anticipate exceeding our goals by 2012.

Robert Peoples, Ph.D., Executive Director, CARE

Executive Summary

In 2005 reported recycling and diversion of post-consumer carpet doubled from 2004. A total of 224.6 million pounds of post-consumer carpet was reported to be diverted from landfill in 2005, with 194.3 million pounds being recycled. Compared to 2004, this represents a 108 percent increase in diversion and a 97 percent increase in recycling. As a result of a more focused surveying effort, the number of companies responding to the survey increased significantly from 2004 to 2005, meaning that some portion of the increase in reported recycling is likely due to a more complete accounting of actual recycling. However, the overall response rate remains relatively low, meaning that there is still likely significant recycling activity that is not accounted for through this surveying process. The progress in level of landfill diversion from 2002 to 2005, along with the goals established in the Memorandum of Understanding (MOU) that established the Carpet America Recovery Effort are shown in the figure below.

Diversion Progress versus MOU Goals



It should be noted that the comparison shown above is based upon the original MOU goals. However, the Executive Director of CARE has developed information to suggest that a more realistic set of intermediate milestones should be based on the Bass Model of Innovation rather than the linear ramp-up assumed in the MOU. A more detailed discussion of this model is presented in Part B of this report.

Data derived from the survey of companies that recycle post-consumer carpet was used to develop a detailed sense of the flow of materials from the point of generation to their ultimate disposition. This information should prove to be useful in improving the effectiveness of market development activities, as well as in targeting future data gathering. In addition, for the first time, data was collected regarding the export of post-consumer carpet material within the recycling process. It was found that about 70 percent of the material recycled

remains in the U.S. while about 24 percent is sent to Asia, with the remainder sent to other parts of the world. This helps improve the overall understanding of post-consumer carpet recycling processes and economics.

Market development continues to be a significant challenge for the carpet recycling industry. Several companies that participated in the 2005 survey indicated that market development should be a priority for CARE. The survey of federal and state agencies revealed that there was relatively little activity in these agencies focused on carpet recycling in general, although there was some limited grant activity reported.

DETAILED REPORT

PART A – ANNUAL SURVEY

Evaluation of Progress Toward National Goals for Carpet Recovery

The MOU that established the CARE initiative included an escalating target for diversion of post-consumer carpet from landfill, with the ultimate goal of diverting 40 percent of the post-consumer carpet generated. In addition, the MOU included estimates of the different types of diversion that might be employed to achieve the overall goal of 40 percent. When this information is coupled with projections of the amount of used carpet that will be discarded, it results in specific quantitative targets for diversion of post-consumer carpet. These are shown in Table 1 on a weight and percentage basis, respectively.

Table 1: MOU Goals for Post-Consumer Carpet Recovery
(Data expressed in millions of pounds)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total Discards[1]	4,678	4,828	4,537	5,038	5,261	5,590	5,642	5,887	6,020	6,605	6,772
Reuse				25			113		211		203-339
Recycling	180			353			620		903		1,354-1,693
Waste-to-Energy		48	45	50	53	56	56	59	60	66	68
Cement Kilns				100			300		200		200
Landfill	4,498			4,510			4,552		4,646		4,812
Recycling Rate	3.8%			7%			11%		15%		20 – 25%
Landfill Diversion Rate	3.8%			10%			19%		23%		27 – 34%[2]

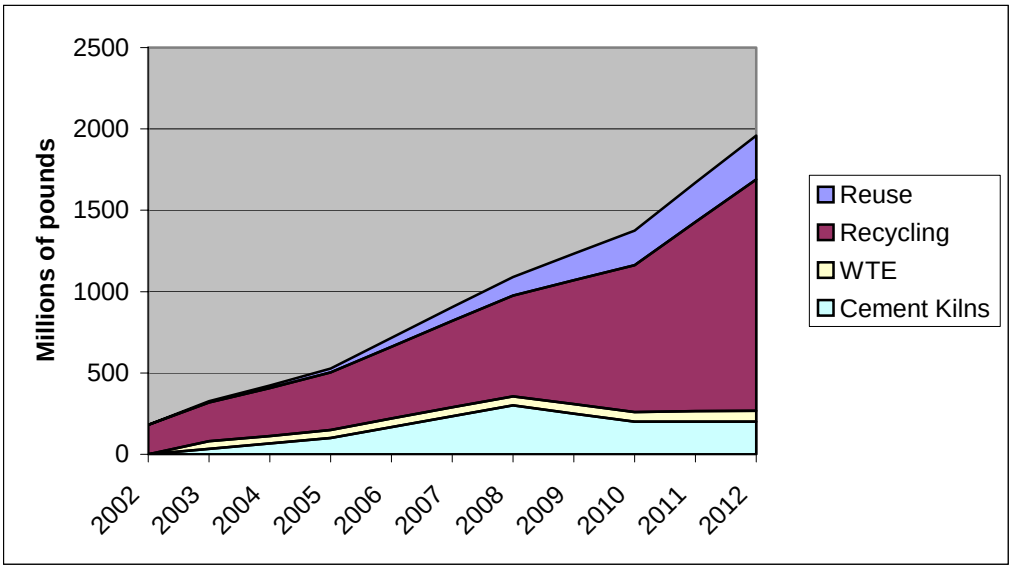
The diversion goals contained within the MOU are also shown graphically in Figure 1. As noted in the Executive Summary, the MOU assumes an essentially linear ramp-up in recycling goals. Research performed by the Executive Director of CARE indicates that a more realistic growth projection of recycling increases may be made using the Bass Diffusion Model of Innovation.

To update the progress towards meeting the MOU goals (and milestones suggested by use of the Bass Diffusion Model), a survey process was conducted by Weston Solutions, Inc. (WESTON) to assess the current status of diversion of post-consumer carpet from landfills in the U.S. This is the fourth year that such a survey was conducted. The results of that surveying process, as well as a

[1] Estimates of carpet discards provided by The Carpet and Rug Institute and incorporated into the MOU.
[2] The percentage goals in the MOU do not add up to 40% and are expressed as a range to allow flexibility in achieving and potentially exceeding the 40% diversion goal.

description of the survey methodology, are contained in the remainder of this section of the Annual Report.

Figure 1: MOU Diversion Goals



Note: WTE = Waste to Energy

It should also be noted that the MOU includes goals for government agencies to participate in and promote market development activities for post-consumer carpet, and it is important that this Annual Report include an update on the status of those activities. Therefore, WESTON conducted a separate survey of state and federal agencies, and the results of that analysis are discussed later in this Report.

Key Quantitative Results from the Carpet Recovery Survey

In reviewing the results from the survey of carpet recycling, it is important to put them into context, both in terms of results from previous years and the overall goals established in the MOU. Therefore, in this discussion of survey results, basic recycling and diversion data will be presented and compared with results from 2002 through 2004 and the goals of the MOU. Then, more detailed analysis of the 2005 survey results will be presented. The Product and Market Activities section of this report has a separate discussion of the survey results in the context of the goals projected using the Bass Diffusion Model of Innovation.

Table 2 shows a comparison of the quantity of post-consumer carpet recycled and diverted from landfill in 2002 through 2005, on a weight and percentage basis.

Table 2
Post-Consumer Carpet Recycling and Diversion, 2002 - 2005

	Millions of Pounds				Percent of Total Discards			
	2002	**2003**	**2004**	**2005**	**2002**	**2003**	**2004**	**2005**
Total Discards	4,678	4,828	4,537	5,038	-	-	-	-
Recycled	46.2	86.6	98.4	194.3	0.99%	1.79%	2.17%	3.86%
Diverted	57.2	93.7	108.2	224.6	1.22%	1.94%	2.38%	4.46%

It should be noted that in this report, material recycled is considered all material recovered and recycled by being remanufactured into the same or different products or by being used as a feedstock in a manufacturing process. Material diverted is all material diverted from landfill, including all recycled material, as well as material sent to waste-to-energy facilities or cement kilns. In previous years, a small amount of material was sent to wholesale or retail establishments and was considered "reuse". In 2005, the survey revealed a larger amount of material being sent to wholesale and retail establishments, but the material had already been processed, meaning that this post-consumer material should be classified as being recycled, and so it is included in the total for what was recycled in 2005.

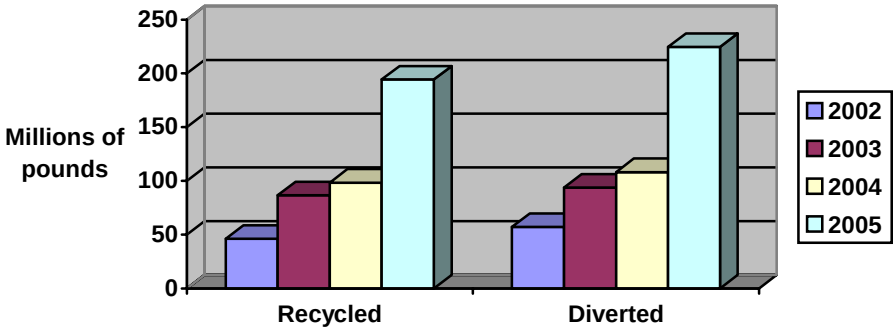
In addition, for the first time there was data reported which falls into the category of waste reduction, not diversion. A company reported that in 2005 it was able to avoid generation of approximately 50,000 pounds of waste carpet by using printed samples rather than ones generated by manufacturing carpet. By this company's estimates, over 50,000 pounds of sample carpet would have been disposed of if the traditional method of producing samples were utilized. This data was not included in the data shown in Table 2 because it is more accurately characterized as a waste reduction mechanism rather than diversion or recycling.

The data in Table 2 show that the quantity of post-consumer carpet reported to be recycled and diverted has increased each year the survey has been performed. The rate of increase was substantially larger from 2004 to 2005 than in previous years. In fact, the quantity of material recycled almost doubled from 2004 to 2005, and the quantity of material diverted from landfill more than doubled. These increases can be seen graphically in Figure 2.

In looking at the comparison between these different years of data, it is important to recognize that these are comparisons of results from survey processes, and therefore it is difficult to assess how much of the increase is a result of actual increases in recycling and diversion versus an increase in the effectiveness of the survey process. This is particularly true since the surveys conducted are believed to capture only a fraction of the actual carpet recycling and diversion occurring in the field (see later sections of this Report for an assessment of the survey process). Nonetheless, these results show significant increases in the amount of material reported to be diverted from landfill and recycled from 2002 to

2005. It should also be noted that the results are consistent with anecdotal data obtained by the Executive Director of CARE in confidential discussions with companies involved in post-consumer carpet recycling in the U.S.

Figure 2
Post-Consumer Carpet Recycling and Diversion, 2002 - 2005



It is also important to review the results in the context of the goals established in the MOU. Since specific recycling and diversion rate targets for each year were not explicitly established within the MOU, in previous years it was necessary to interpolate between the 2002 and 2005 targets, whereas the results for 2005 can be compared directly to the MOU target for that year. The comparison of the MOU goals for diversion and recycling with survey results for 2002 through 2005 are shown in Table 3. This shows that the large increase in reported recycling from 2004 to 2005 helped close some of the gap between MOU goals and reported recycling. The large increase in diversion, however, is insufficient to close the gap between the MOU goal and reported diversion. It should be noted, however, that one of the prime reasons for this is that the MOU projected a very large increase in overall generation of post-consumer carpet from 2004 to 2005, and this results in "raising the bar" for the goal for diversion and recycling.

These results must also be considered within the context of the overall response rate for the survey. Response rates have been historically low in each year of the survey, with about 7 percent of 350 companies responding. For the 2005 survey an effort was made to focus on a smaller and growing group of companies that were believed to be more involved in carpet recycling and to improve outreach to those companies. This resulted in a significantly higher number of companies responding – 32 instead of about 20 in previous years. It is likely that this is part of the reason for the large increase in reported recycling from 2004 to 2005. In other words, it appears likely that at least some of the increase in reported recycling and diversion may be due to a higher response rate as opposed to an increase in actual recycling activity. However, a major portion of the increase is also likely due to actual increases in recycling activity.

Table 3
Comparison of Post-Consumer Recycling and Diversion with MOU Goals
(Total Discards assumed to be equal to quantities projected in MOU)

	Total Discards	Recycled		Diverted	
Year	**Millions of Pounds**	**Millions of Pounds**	**Percent of Total Discards**	**Millions of Pounds**	**Percent of Total Discards**
2002					
Reported	4,678	46.2	1.0%	57.2	1.2%
Goal		178	3.8%	178	3.8%
Difference		-132	-2.8%	-121	-2.6%
2003					
Reported	4,828	86.6	1.8%	93.7	1.9%
Goal		235	4.9%	283	5.9%
Difference		-148	-3.1%	-189	-4.0%
2004					
Reported	4,537	98.4	2.2%	108.2	2.4%
Goal		267	5.9%	358	7.9%
Difference		-169	-3.7%	-250	-5.5%
2005					
Reported	5,038	194	3.9%	225	4.5%
Goal		353	7.0%	528	10.4%
Difference		-159	-3.1%	-303	-5.9%

It is also important to recognize that, even with a significantly larger number of companies responding to the survey, it represents only about a third of the companies targeted for recycling. Thus, although the higher response rate increased the potential for double-counting of recycling, the response rate is still low enough that this is probably more than offset by recycling activity that has not been captured. As a result, the reported diversion and recycling may still be under-counting actual activity.

With those basic comparisons complete, the results of the 2005 survey can be examined in greater detail. Table 4 presents the 2005 survey results, showing the breakdown by type of diversion from landfill.

As noted previously, in past years the flow to wholesale and retail establishments was characterized as reuse, based upon the information provided by survey respondents. For 2005, a much larger amount of material was reported to be sent to wholesale and retail establishments than in previous years. The nature of the operations reported to be performed is such that this material is better characterized as being recycled. Thus, this flow is shown separately to be consistent with past years, but is considered to be a sub-set of material recycled. The other material recycled is material that is sent to sorters, processors or manufacturers after being handled by companies responding to the survey.

Table 4
Breakdown of 2005 Diversion of Post-Consumer Carpet
(Figures may not add up due to rounding)

	Millions of pounds	As % of Total Diversion	As % of Total Discards
Recycling			
Wholesale/Retail	18.1	8.0%	0.4%
Other	176.2	78.5%	3.5%
Total Recycling	194.3	86.5%	3.9%
Waste-to-Energy	26.9	12.0%	0.5%
Cement Kilns	3.4	1.5%	0.1%
TOTAL DIVERSION	224.6	100%	4.5%

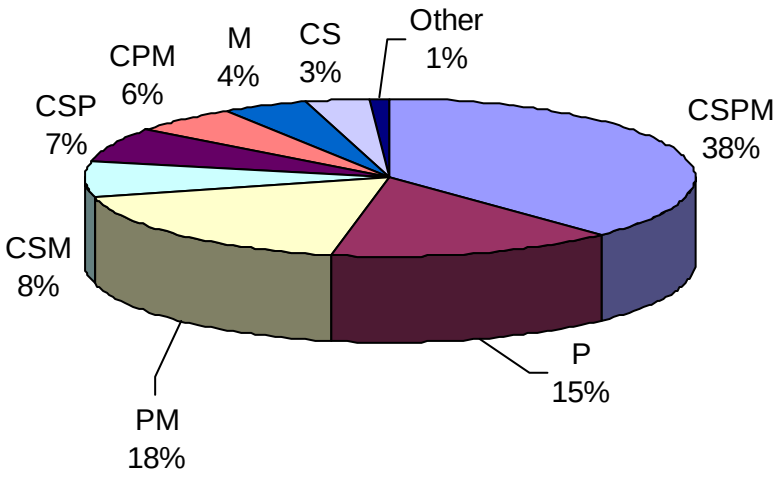
The data in Table 4 show that for 2005, all of the quantitative results for diversion came primarily from two types of activities: recycling and waste-to-energy, with the vast majority of the diversion occurring through recycling. There was also a small amount of diversion reported through cement kilns.

Another type of data gathered during the surveying process was information regarding the flow of used carpet through different types of companies. This information can help future market development efforts, and as a result, the surveying process was designed to extract as much information as possible regarding the flow of material through different types of entities. To accomplish this goal, survey respondents were asked to characterize the nature of their business into one or more of the following categories (which are listed below along with their definitions):

- Collector – A company that collects used carpet from the point of generation and transports it to a processing or waste management facility.
- Sorting Facility – A facility that separates waste materials (including used carpet) from a mixed waste stream. The end result of this process is used carpet that is separated from other materials.
- Processor – A company or facility that takes used carpet (whether handled by a sorting facility or brought directly by a collector) and processes it for use as a feedstock in a manufacturing facility.
- Manufacturer – A company or facility that utilizes processed carpet materials and transforms them into other products, or uses them as raw materials in a manufacturing process.

The breakdown of diversion by different types of companies is shown in Figure 3.

Figure 3
Types of Companies Contributing to Post-Consumer Diversion



C=Collector, P=Processor, S=Sorter, M=Manufacturer
(Percentages reflect percent of total post-consumer diversion)

It can be seen from Figure 3 that there is significant diversity in the types of companies contributing to the diversion of post-consumer carpet in 2005. This diversity is greater than that reported in previous years, which is likely a result of the higher response rate (with more companies responding to the survey, the results are more likely capturing the breadth of company types involved in post-consumer carpet recycling). The information presented in Figure 3 provides a few key insights regarding the companies involved in carpet recycling:

- The largest fraction of diversion is contributed by companies that perform all four key functions: collection, sorting, processing and manufacturing.
- 92 percent of total diversion is contributed by companies that perform processing as one part of their operations.
- No companies reporting post-consumer diversion perform solely collection. This is important, as it reduced the chances for double-counting. Material that has already been sorted and/or processed before being passed on to another company has less chance of being double-counted, since it would likely not be clear to the company receiving the material if it came from post-consumer carpet or not.

Another component of the surveying process that was geared towards increasing an understanding of the flow of recycled material was to ask survey respondents the type of companies to which they supply used carpet material after they are done with it. Survey respondents were asked what percentage of the post-consumer used carpet that they handle is passed on to sorting facilities, processors, manufacturers, waste-to-energy facilities or landfills. The results from this portion of the survey are summarized in Table 5 and shown graphically in Figure 4.

Table 5
Destination of Post-Consumer Carpet Handled by 2005 Survey Respondents
(Totals may not agree due to rounding)

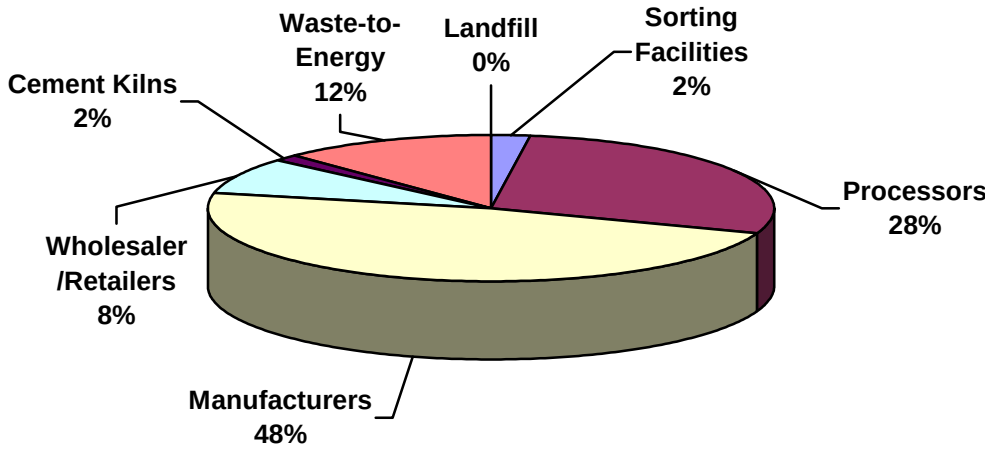
	Sorting Facilities	Process-ors	Manu-facturers	Whole-saler/ Retailer	Cement Kilns	Waste-to-Energy	Land-Fill	TOTALS
Millions of Pounds	5.2	63.6	107.4	18.1	3.4	26.9	0.3	224.9
Percent of Total Handled	2.3%	28.3%	47.8%	8.0%	1.5%	12.0%	0.1%	100.0%

It can be seen that roughly one-half of the material handled by survey respondents was sent to manufacturers. This includes a significant amount of material that is used internally by manufacturing companies, as well as the material sent to manufacturers by other companies. Another one-quarter of the material is sent to processors. As noted previously, the material sent to wholesalers/retailers was characterized as being recycled (rather than reused, as in previous years) since all of this material had been processed prior to being passed on to the wholesalers/retailers.

With the information described above regarding the types of companies that handle post-consumer carpet for recycling and the types of companies that they pass that material on to, a flow of carpet recycling can be developed. While the relatively low response rate for the survey prevents one from characterizing this flow as being completely representative of the overall carpet recycling industry, it does provide an interesting insight into how post-consumer carpet gets recycled, at least for the companies that participated in the survey. This flow is illustrated in Figure 5.

While the flows in this diagram can appear quite complex, a great deal of information can be derived from review of this diagram. First, it is possible to see the split of “inputs” into the recycling process into the three categories of companies that reported recycling post-consumer carpet. Second, one can get a sense of the split of the ultimate disposition of material at the end of the recycling process (at least the end as far as this surveying project goes). In addition, the diagram is useful in showing what types of companies send material to different types of end-users. The flows shown in Figure 5 are somewhat more complex than those from previous years, which is likely the result of the higher response rate which has more accurately captured the actual diversity and complexity of the carpet recycling process.

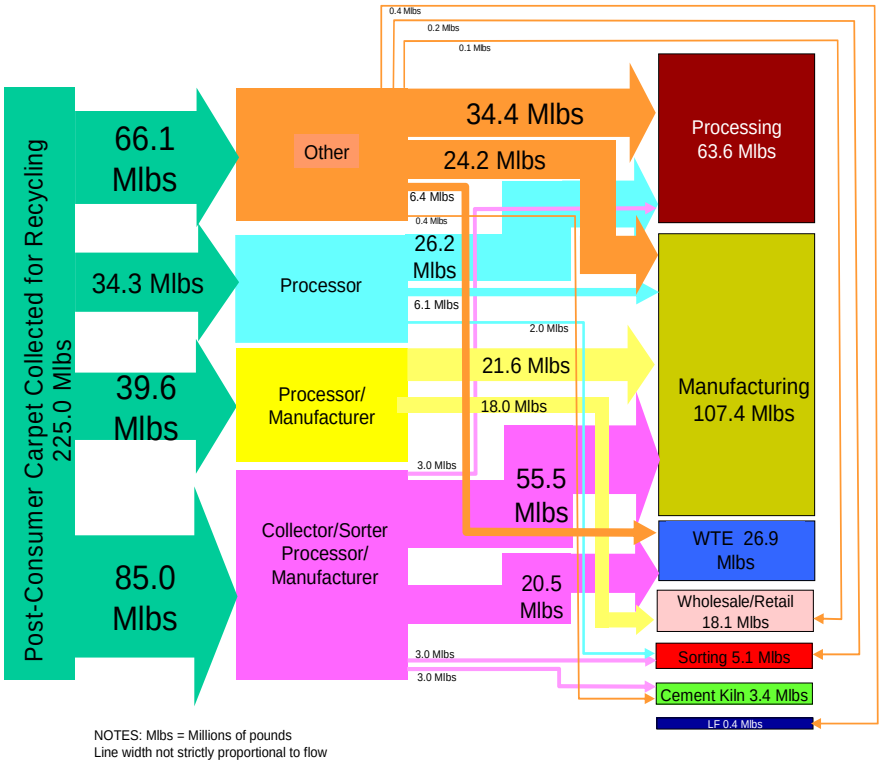
Figure 4
Destination of Post-Consumer Carpet Handled by 2005 Survey Respondents



The last key component of the data gathered during the 2005 survey was information related to domestic and international flows of material. In response to a desire to understand more about how much material may be flowing overseas, the survey was expanded this year to include questions about the percentage of material handled that was sent to facilities in the U.S. versus other parts of the world. Not all survey respondents provided data regarding the destination of material handled, but the responses received account for about 70 percent of the total flow of post-consumer material reported. Thus, this information seems to provide a reasonable estimate of the overall geographic flow of post-consumer carpet recycled. The results are shown in Figure 6.

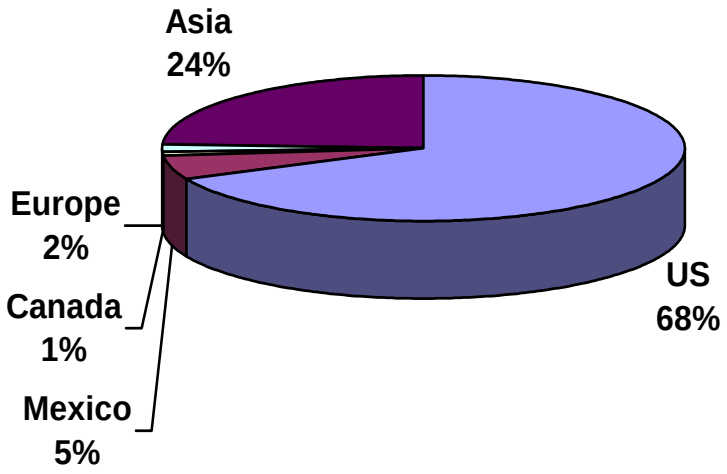
It can be seen in Figure 6 that the majority of the post-consumer material recycled is sent to facilities within the U.S. The most significant exports of material are to Asia, which represents about one-quarter of the total material for which destinations were reported. Relatively small quantities are sent to Mexico, Europe and Canada.

Figure 5
Flow of Post-Consumer Carpet Recovery Reported in 2005



NOTES: Mlbs = Millions of pounds
Line width not strictly proportional to flow

Figure 6
Destination of Post-Consumer Carpet Recovered in 2005
(Results are percentages of the total flow for which destinations were reported)



Qualitative Feedback from Carpet Recovery Survey

In addition to the quantitative data gathering that was performed during surveying, survey respondents were also asked what they thought CARE could be doing to assist their business in recycling carpet. Responses ranged from very general to very specific, and were not always directly related to the question of how CARE could provide additional assistance. Nonetheless, the responses provide useful insight into the current status of thinking of companies active in carpet recycling. Some of the most relevant comments are summarized below:

- One company suggested that CARE provide assistance with putting manufacturers directly in touch with generators.
- Another company indicated a desire for CARE to provide grants for market development.
- One survey respondent suggested that CARE work to establish a disposal fee for carpet, similar to that utilized for tires.
- There were two comments that related to the general desire for CARE to increase dissemination of information.
- One company suggested that CARE develop a marketing cooperative and another suggested that CARE provide more opportunities for outlets for raw materials.
- One survey respondent indicated a desire for CARE to offer incentives to smaller companies to develop methods to consume post-consumer carpet.

Conclusions

The following key conclusions can be drawn from the data presented:

- Reported diversion and recycling essentially doubled from 2004 to 2005. While the fraction of the increase due to increased recycling activity versus increased reporting cannot be determined, it nonetheless represents significant progress towards goals for diversion and recycling.
- Despite the significant increases, reported diversion and recycling remain below the goals contained in the MOU. However, an analysis presented by the Executive Director of CARE suggests that progress is realistic when measured against a different model for projecting increases in recycling (see Part B - Product and Market Development Activities section of the report).
- There is a great deal of diversity in the types of companies reporting post-consumer carpet recycling. The largest fraction of recycling is attributed to companies that perform all four key recycling functions: collection, sorting, processing and manufacturing.
- Roughly half of the post-consumer carpet material reported to be recycled ended up at a manufacturing facility and about one-quarter at a processing facility.
- Approximately 70 percent of the material reported to be recycled was sent to facilities in the U.S. About 25 percent of the material was exported to Asia, with the remainder exported to other parts of the world.

Survey Methodology

In developing a survey methodology to establish quantitative estimates of recycling of a particular waste-stream, two key factors must be taken into account: 1) participation; and 2) double-counting. Participation is essential in any surveying process, but more so for this type of survey, where there is no logical or reliable way to extrapolate results from respondents to the general population. This means that whatever results are derived from the respondents to the survey are the complete and total results. Thus, every effort must be made to maximize participation.

However, with increasing participation comes another potential problem: double-counting. Since a given pound of used carpet may pass through several different entities on its way from the point of generation to its ultimate disposition (reuse, recycling or disposal), and since all of these different types of entities (collectors, sorting facilities, processors and manufacturers) are all included in the survey, there is the chance that the same pound of carpet could be counted more than once. As participation increases, the likelihood of double-counting increases, since there is a greater chance that more than one company may be reporting on handling the same material.

A number of features were built into the surveying process to address these two key issues:

- Confidentiality of data is often the key to participation, and all aspects of the survey were designed to preserve confidentiality. In particular, a web-based surveying tool was used to allow respondents to provide data completely anonymously, if they desired. There is no need to e-mail the survey back, so if no contact information is provided, the results cannot be traced back to a particular source. In addition, all written and verbal communication with potential survey respondents stressed the confidentiality of data.
- Simplicity and ease of response is also a key to participation rates. The survey questions were streamlined to the maximum extent possible so that only the most critical data requirements were included, based upon the philosophy that it is much better to have the basic data from a lot of respondents than detailed information on a few (particularly since there is no basis for extrapolation).
- An incentive can often help to boost participation rates, so the survey was distributed with an offer that the first 50 participants would receive $20 gift certificates. While it is difficult to assess if this had an impact on participation rates, we do believe it contributed to respondents providing contact information in their web-based responses.
- Participation rates can also be boosted through the use of multiple means of contact (as well as repeated contacts). Thus, e-mail, regular mail and telephone were all used as means to contact potential survey respondents.
- To maximize the value of those survey responses received, and to minimize chances of double-counting, it was determined that it would be best to focus surveying resources on large-scale manufacturers that recycle used carpet. While all types and sizes of companies involved in carpet recycling were contacted initially with a request to respond to the survey, resources for telephone follow-up were prioritized to focus more heavily on those entities judged to be large-scale manufacturers handling used carpet. Since most recyclables tend to aggregate as they go through various stages of the recycling process (going from a large number of collectors, to a smaller number of sorting facilities, to a smaller number of processor and finally to a smaller number of manufacturers), one can get more “bang for the buck” in devoting resources to gathering data from a manufacturer than from other types of companies.
- To reduce the chances of double-counting, survey respondents were asked to identify the geographic sources of their materials, to the extent they were known. The notion behind this is that if the nature of the survey responses is such that there is a sense that information from two or more companies might reflect handling of the same material, the geographic sources of these companies could be reviewed to determine if that was likely.
- In another attempt to reduce the chances for double-counting, survey respondents were asked about the type of companies that receive the

material that their company ships out after they are done handling it. This information not only allows for identification of possible double-counting, but also serves to provide a more complete picture of the overall flow of used carpet through the collection and recycling process.

With those basic principles in mind, the surveying process was implemented, using the steps outlined below, which are described in generally chronological order:

1. The survey form used in the 2004 survey was updated to reflect the need to recover data for 2005, and to add two areas of data-gathering not included in previous surveys. The two new areas of information gathering are the quantity of material sent overseas and the type of products produced by survey respondents. The survey form is shown in Appendix 1 to this Report.
2. The survey form was converted to a web-based survey and posted on the internet. The survey is accessed by going to a specific URL address that houses the survey, and results are submitted via the internet, without the need for e-mail or paper-based responses. The results are only available to WESTON, as they are password protected, to preserve confidentiality.
3. Based upon past experience with this survey process, the surveying was focused solely on those companies for which specific individuals have been identified as a point of contact. In addition, in the months leading up to the survey, the Executive Director of CARE worked to develop a more extensive listing of contacts and e-mail addresses than had been available in previous years. This process, which was a recommendation resulting from the previous year's efforts, is believed to be the primary contributor to the higher response rate this year.
4. Companies with specific contacts and e-mail addresses were notified via e-mail about the survey and provided the URL so that they could respond electronically. A total of 118 individuals from 97 different companies were sent e-mail notifications of the survey (more than one individual was contacted from an individual firm in several instances). The e-mail notification stressed the confidentiality of the information they provide, as well as the opportunity to receive a gift certificate as a "thank you" for their response.
5. Approximately two weeks after the initial e-mail was sent out, follow-up activities were initiated. These included follow-up e-mails to those companies that had not responded, reminding them of the opportunity to receive a gift certificate in exchange for their response, as well as telephone calls to prompt response and answer questions that some potential respondents had raised. Follow-up reminders increased responses significantly.
6. All survey responses were reviewed for any internal inconsistencies or unclear responses. The survey responses were also reviewed to determine if there were any questionable responses (e.g. data that appears to be off by orders of magnitude with regards to company size). In those instances where there was some question about the responses

provided and the respondents have provided their name (respondents can choose to respond entirely anonymously), follow-up was performed to clarify the responses.

7. Data from survey responses were transferred to a spreadsheet-based database. This database contains all of the quantitative responses, as well as summaries of any descriptive information provided by the companies.
8. The data in the database was compiled and analyzed to produce the results described herein.

It should be noted that in one instance, information was provided through an intermediary and not by the company itself. This was done only because the intermediary was known to be a reliable source of information and the rationale for using the intermediary was known.

Assessment of Survey Approach and Results

The key difference between the survey approach used this year and that used in previous years is that the data-gathering was focused solely on those companies with specific contact names and information. This approach was taken based upon the experience from the last two years, where the only responses received were from those companies where a specific contact person had been identified and e-mail contact had been made – no responses came from mail or telephone surveys in the past two years, so these approaches were no longer utilized. To make this more focused approach effective, CARE spent considerable time in the months leading up to the surveying gathering additional and more up-to-date contact information for CARE member companies, particularly those known to be involved in recycling of carpet. This resulted in doubling the number of companies for which specific e-mail contact information was available.

This shift in approach has clearly paid dividends – the number of firms responding to the survey increased 60 percent – from 20 to 32. While this is not a phenomenally high response rate (it represents about 33 percent of the targeted firms and about 10 percent of the total number of firms in the CARE database), it is a significant jump in participation and shows the benefits of this more targeted approach.

It is likely that the increase in survey response rate is directly responsible for a good portion of the doubling of diversion from 2004 to 2005. However, we also know that several of this year's respondents were not recycling carpet in 2004. As has been noted in previous years, the one downside to increased participation rates is the increased potential for double-counting. Double-counting can occur when material handled by one survey respondent (say a collector) is also handled by a second survey respondent (perhaps a processor). As discussed earlier in this report, the survey is designed to collect information that allows determination of the potential for double-counting. Although the participation rate has increased significantly since last year, it does not appear that double-

counting is a significant issue with regards to this set of data, for the following reasons:

- Although participation rates increased significantly, they remain relatively low. Thus, with data from only one-third of the targeted companies (and a much lower percentage of the total number of companies involved in the carpet industry) responding to the survey, even if there is some double-counting within the data it is likely more than offset by the fact that a good deal of carpet recycling is likely going unaccounted for.
- A significant portion of the carpet recycled is handled by manufacturers who reuse the material internally within their own manufacturing process, thus eliminating the possibility for double-counting of this material.
- Very little material is handled by companies that are solely collectors, and it is when there is data provided by collection-only companies that the chances for double-counting increase. When the company performing collection also does some sorting and/or processing, it reduces the chances for double-counting, since the next company in the process is unlikely to know the specific source of the material they are receiving and thus unlikely to report it in a survey on recycling of post-consumer carpeting.

Results from Survey of State and Federal Agencies

As was done in previous years, the U.S. Environmental Protection Agency (EPA) and state environmental regulatory agencies were surveyed regarding their efforts to promote carpet recycling. A separate web-based survey tool was created for these agencies, which were contacted via e-mail (more than once in most instances), and with telephone follow-up for those agencies that did not respond. Of the 11 EPA offices contacted, four responded, and of the 50 state agencies, fourteen responded. It should be noted that this is a significant increase from 2004, when only two EPA offices and three states responded.

The specific questions posed to these agencies, and a summary of their responses is provided below.

What efforts were made in 2005 to publicize carpet collection/recycling options (e.g. web-sites, pamphlets, press releases, etc.)?

- One EPA region indicated that they did not perform any activities to promote carpet recycling, one EPA region indicated it did so through conferences and seminars, and two reported using other methods.
- Six state agencies reported promotion of carpet recycling through their web-site, one through press releases, four through conferences/seminars, four through other means and six state agencies reported that they did not do any promotion of carpet recycling in their state (some states reported using more than one method).

What efforts were made in 2005 to promote business development related to carpet recycling?

- One EPA region indicated it used education to promote business development, one region used grants and two EPA regions indicated they did not make any efforts in 2005 to promote business development related to carpet recycling.
- Four states indicated they provided grants, four states provided research, six provided education and three provided "other" support for business development related to carpet recycling (note that some states reported using more than one method). Six states indicated no activities during 2005 to promote business development related to carpet recycling.

Have any attempts been made to quantify the level of carpet recycling in your state/region? If so, can you either summarize the results or provide information about how to obtain these results.

- One EPA region indicated that a state agency had done significant work on characterization of the waste stream; the other three responding EPA regions indicated that no attempts had been made to quantify carpet recycling.
- Five of the states indicated that quantitative data had been collected on carpet recycling in their state, but only two were able to provide any specific data.

Are you aware of any dedicated carpet collection efforts within your state/region (e.g. designated collection days for setting out used carpet)? If so, is there any data on the quantity of material collected and/or recycled?

- None of the responding EPA regions indicated an awareness of designated carpet collection efforts.
- Six states indicated an awareness of dedicated carpet collection or recycling efforts, but only one had any quantitative data.

Are there standards for recycled content of carpet procured by your agency? If so, do they include minimum post-consumer recycled content requirements?

- Three EPA regions indicated that they have recycled content standards for purchase of carpet, with two of the three noting that it has a post-consumer content standard.
- Five states indicated that there are procurement requirements for purchase of carpet with recycled content, six states indicated they have standards for post-consumer content and twelve states indicated that they have general guidelines for purchasing items with recycled content (some states provided more than one response).

How much money (if any) did your agency spend in 2005 on promotion of carpet recycling?

- One EPA region indicated it provided a $30,000 grant, two EPA regions indicated that no money was spent on promotion of carpet recycling and the other did not respond to the question.
- One state noted that it had provided a grant of $6,000 related to carpet recycling and another state noted that it had spent about $12,000 on promotion of carpet recycling.
- Four states indicated no money was spent on promotion of carpet recycling and another three indicated that no direct money was spent, but some staff time was devoted to this issue.

Does your agency receive inquiries regarding carpet recycling? If so, please characterize the nature of these inquiries and the type of response provided.

- Three EPA regions indicated that inquiries were rare (characterized as several a year) and one indicated that they were occasional (about once per month).
- Three states indicated inquiries are frequent (several a month), three states indicated they are occasional (about once a month), five states indicated they are rare and three states indicated no questions had been received at all.

Please describe any other initiatives undertaken by your agency in 2005 to help promote carpet recycling.

- One EPA region noted that it recarpeted its building and all of the old carpet was recycled and new carpet was purchased with recycled content.
- Another EPA region indicated that it worked with a state agency to develop carpet procurement standards.
- One state described some specific efforts to promote a particular company and technology at an entrepreneurs meeting, a partnership with the Carpet and Rug Institute on green lodging and an effort to recycle carpet from state buildings.
- Another state indicated that it has a Carpet Workgroup that brings together stakeholders involved in carpet recycling. In addition, this state provided a grant for a carpet recycler to develop a web-site.
- Two states described their efforts to develop and apply recycled content standards for state purchases of carpeting.

PART B – PRODUCT and MARKET DEVELOPMENT ACTIVITIES

Introduction

The year 2005 will be remembered as the year post consumer carpet recycling rebounded following the shutdown and bankruptcy of Polyamid 2000 in mid-2003. The survey results for 2005 show solid growth in this nascent industry. The level of interest and investment saw a significant increase of activity supported by a spike in crude oil prices, an expectation that crude will remain high (i.e., greater than $50/bbl) and that there is a growing demand for this thermoplastic recycle stream.

Growth in a number of new and existing products and outlets is fueling a rise in demand for post-consumer carpet as a viable feedstock resulting in significant growth in diversion. 2006 is projected to be even better!

Progress

The growth we see in recycling of post-consumer carpet has been catalyzed by new outlets for the nylons, especially nylon 6 driven by the announced plans to restart Evergreen Nylon Recycling (ENR) by Shaw Industries. During the fall of 2005 Shaw completed the acquisition of Honeywell's Fiber operations which included Honeywell's 50% stake in ENR. In early 2006 Shaw purchased the remaining 50% interest from DSM to consolidate planning and control at Shaw. Seeing a strategic competitive opportunity for a post-consumer derived nylon 6 fiber in the marketplace, Shaw is looking to collect 100 million pounds of nylon 6 for the initial start-up of this facility. Nylon 6 makes up roughly 30% of the post-consumer carpet stream. In order to balance the collection system and take advantage of other recycling opportunities, Shaw may collect as much as 300 million pounds annually. This represents a dramatic increase in demand for post-consumer carpet and CARE applauds Shaw Industries on this strategic decision.

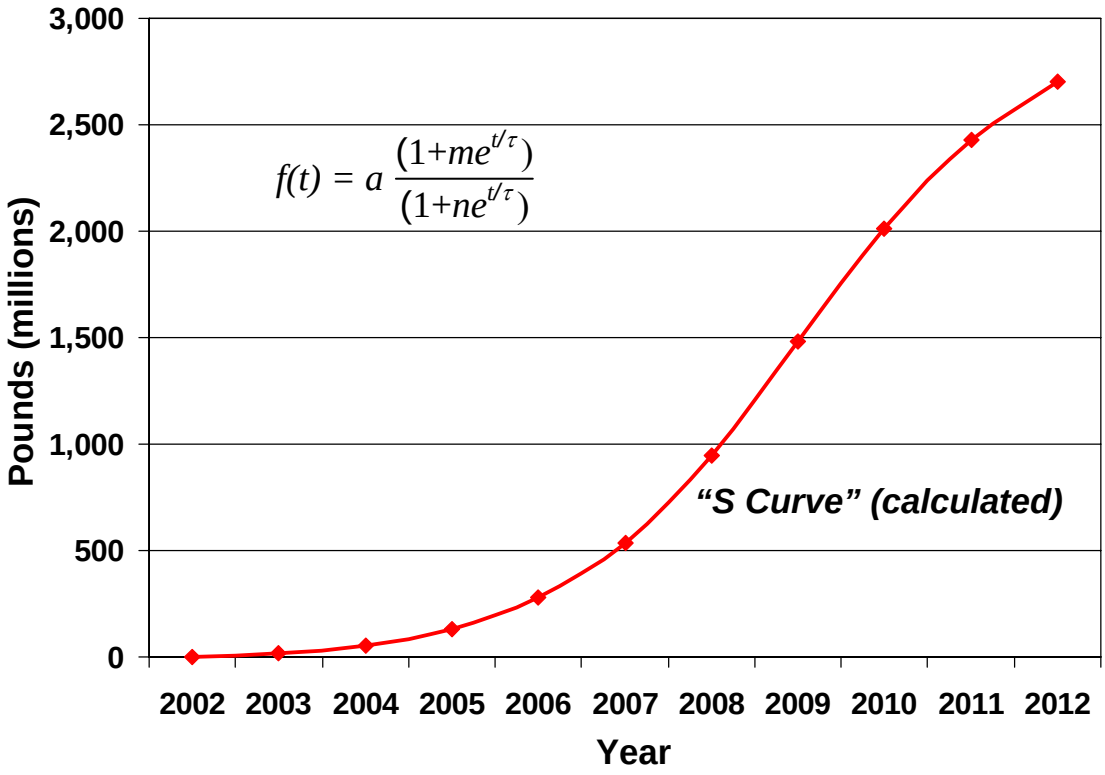
In last year's report we introduce the concept of the S Curve and how it reflects a realistic ramp up for the introduction of innovative new products and technology into the marketplace. Historically the introduction of new technology and products follows a slow introduction as a result of early adopters. The concept was first introduced by Frank M. Bass in 1969 as the Bass Diffusion Model of Innovation. History teaches us that once the technology and products are proven in the marketplace, widespread adoption leads to rapid growth until the market ultimately reaches maturity. Success is achieved when we reach critical mass and tip over into widespread adoption. It is our belief that the nascent post-consumer carpet recycling industry is at or close to that tipping point and the years 2006 and 2007 will be critical to success.

The original CARE MOU goal and commitment stand – 40% diversion by 2012! We will accomplish the 40% landfill diversion goal by 2012. Based on three years of experience what has changed is the practical realization of our path to

get there. With the Bass Model to guide us, we can set more realistic year over year mileposts to tell us if we are on track. This allows for focused program corrections along our route to success. Much like a flight from New York to London, the pilot checks his waypoints and makes subtle corrections for uncontrolled variables such as wind speed, wind direction, storms, etc.

In Figure 7 the Bass Diffusion model was used to calculate a ramp up from zero to 40% diversion between 2002 and 2012.

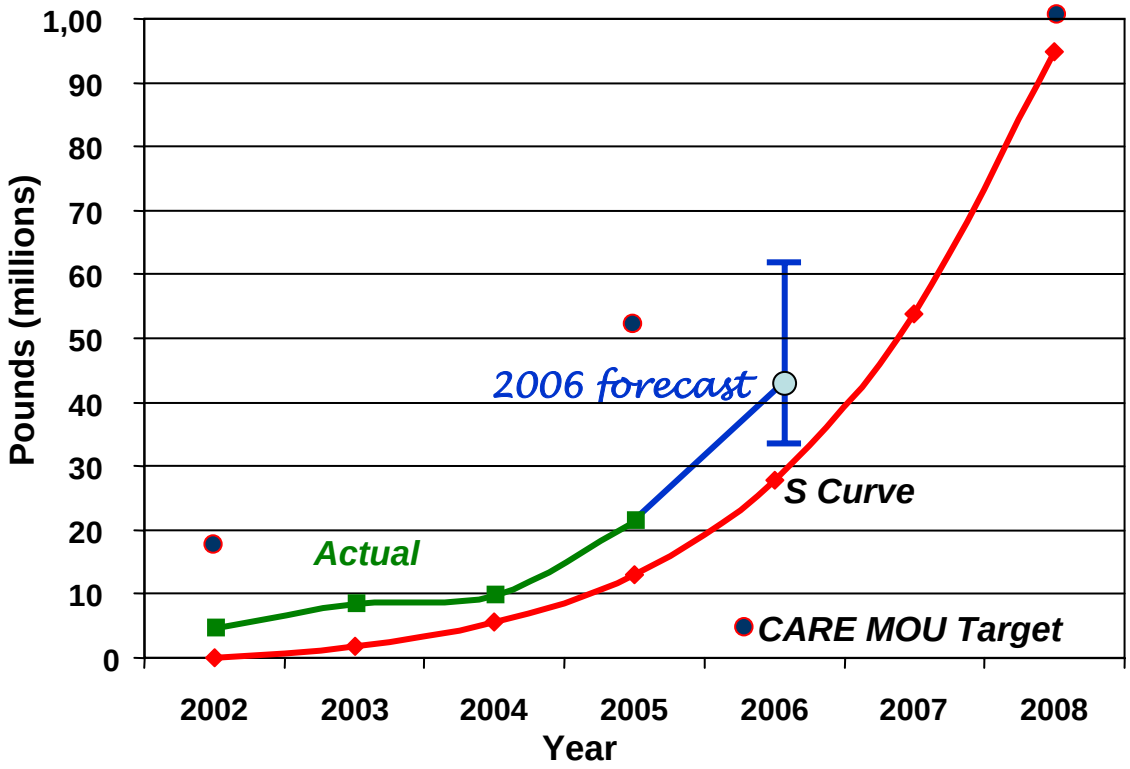
Figure 7: Bass Model of Innovation



Last year's curve has been updated to reflect the actual data for 2004 and 2005 along with incorporation of the latest demand projections. We believe the data for the last four years suggests we are on track to reach the tipping point in 2006/2007. (Please see the 2004 CARE Annual Report for a description of the original S Curve chart.)

This new tracking model is significant for two reasons. First, it provides CARE with a realistic growth path to guide our efforts and acts as an early warning mechanism alerting us if we are not on target. Second, it indicates we are in fact on the curve in terms of targeted diversion. With four years of actual data now available and a strong growth forecast for 2006 the curve tells us that CARE is on target to accomplish our 2012 commitment of 40% diversion. Figure 8 takes a more focused look at the years 2002-2008 and plots actual and 2006 forecast vs. the calculated S Curve.

Figure 8: Carpet Diversion vs. Bass Model Milestones



One can see that the results for the first four years of CARE survey are consistent with the model predictions. The blue line on this graph shows our best guess for the 2006 results based on confidential feedback from the marketplace.

Key demand outlets for 2006 pounds include the following, Table 6. These are the forecasted rates of demand for post-consumer carpet by year end 2006 and do not necessarily mean this number of pounds will be collected in 2006.

Table 6: A Conservative Projected Demand in Growth for Post-Consumer Carpet in 2006/2007

Unreported “35M pounds” in 2005*	35M
Columbia Recycling comes on-line	100M
NYCORE Plant #2 on-line summer ‘06	60M
Composite Lumber plant late ’06	60M
Evergreen Nylon Recycling	100M
Plastic Rail Tie (PRT, estimate)	15M
Champion Polymer growth	10M
Unidentified	20M

Total	400M pounds

* Private communication with a non-reporting recycler in 2005.

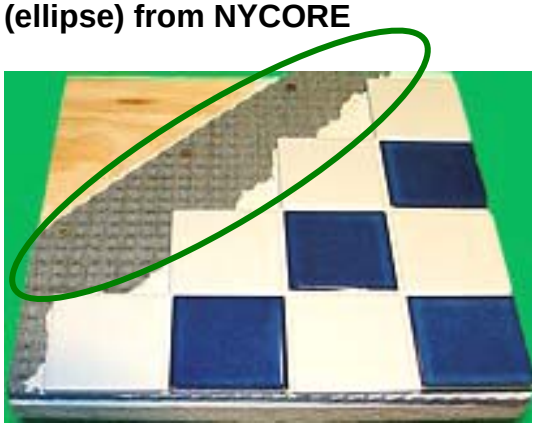
What are the probabilities of achieving these projections? While none of us have a crystal ball, there are some factors that favor such a projection. The factors below were elaborated in our 2004 report and remain important drivers of the CARE initiative.

1. Crude oil prices remain at historic levels. No one expects a return to oil at $25 a barrel. Recent forecasts peg top prices as high as $100 per barrel. This is a major driver of the economics for recycling.
2. Instability in the Middle East, South America and even Africa continues to create uncertainty in crude oil availability and thus pricing stability.
3. Post industrial sources of plastic materials, especially from carpet manufacturing, are decreasing. This means less of the cleaner, easier to handle PI stream is available for recovery. These reductions are driven by good manufacturing practices, 6 Sigma programs, energy recovery, etc.
4. As a result of item 3, the supply/demand balance for PI materials has resulted in dramatic price increases for this material stream.
5. China cannot build petrochemical plants fast enough to meet their increasing appetite for both energy and basic raw materials. The result is pricing pressure due to supply/demand.
6. Factors 1-5 are not expected to abate but rather increase pressure on raw material sources.
7. There is a growing infrastructure in the United States to build business models on supplying these demands. Post-consumer carpet is seen as a new and potentially plentiful source of economic thermoplastic feedstocks. The technology and equipment are emerging that makes recovery cost effective and competitive.

These drivers present a dynamic scenario where post-consumer carpet is an abundant and potentially inexpensive source of key feedstocks – primarily nylon 6, nylon 6,6 and polypropylene for products containing recycled content. Evidence of this is the dramatic increase in interest by equipment vendors, manufacturers and recyclers in post-consumer carpet. CARE is seeing major investments in new technologies for both the recovery and processing of post-consumer carpet as well as new products and the expansion of existing products which incorporate post-consumer carpet materials.

CARE continues to enjoy a unique position to dialog and facilitate with key players both inside and outside the carpet industry. It is readily apparent, as a result of such conversations, that there are significant investments being made by many players in both the basic infrastructure of collection and processing as well as engineering technologies for the use of this raw material feed stream. As manufacturers become more confident in the reliability of a secure, consistent quality of supply, demand will grow dramatically in the next several years. In the past many of these concepts were labeled “proprietary.” Now as new plans and plants come on line these proprietary programs are manifesting themselves as major growth demand drivers for post consumer carpet feedstocks.

Figure 9: Ceramic tile backer board (ellipse) from NYCORE



The MOU signed in 2002 assigns primary responsibility for "funding" CARE to the carpet industry. It is not currently possible to accurately quantify the investments made to date in CARE related initiatives. However, we do know the cumulative industry sponsorship of CARE is closing in on the $1 million dollar mark in 2006. We also know industry investments in the development of new products, technologies and facilities to use post-consumer carpet now run in the tens of millions of dollars.

In summary, investments are being made, external forces are positive, but we know the single most important requirement for driving the diversion of post consumer carpet is the creation of demand for products that contain post consumer carpet as a key ingredient. The way to make this happen is to get our economics right. This is where CARE is spending a significant effort in terms of facilitating information exchange and developing economic models based on honest and frank dialog.

CARE Accomplishments in 2005

Overall CARE enjoyed its most productive year in 2005. By all measures 2005 saw improvements in every area starting with total diversion. Some of the key accomplishments are listed below:

- Total diversion in 2005: 225M pounds, up 108% over 2004!
- StarNet partnership to implement a reclamation program for its members. StarNet printed 18,000 brochures for use in a road show focused on the A&D community and carrying the CARE logo. This is a huge multiplier effect in terms of getting the CARE message out.
- Tricycle Inc. partnership: A unique two part partnership. Tricycle donated sweat equity in the creation of the new enhanced CARE web site. In addition, for each SIM specified by CARE members, Tricycle made a monetary donation to CARE totaling a maximum of $5,000. A check was presented at the 4th Annual CARE conference.
- CARE continues to expand our annual sponsorship base in terms of new participants. This year we welcome StarNet, Tricycle Inc., Columbia Recycling, Leigh Fibers, Balcones Resources, Masland Contract and the Pollution Prevention and Assistance Department of the Georgia Department of Natural Resources as new supporting members of CARE.
- Increasing attendance at our annual conference in May 2005.

- Dramatic increase in attendance at our fall entrepreneur meeting despite disruption due to a hurricane. In fact, about 50% of the entrepreneur participants at the November 2005 conference were new to CARE since the 3rd Annual CARE Meeting in May 2005.
- CARE initiated a Procurement Project in 2005 focused on development of specifications for use by federal, state and local procurement agencies. The aim is to help direct public monies toward the use of products containing post-consumer carpet. This effort compliments private section efforts.
- The forecasted additional demand of ~400M pounds by the end of 2006.
- NYCORE, and CARE will partner at GreenBuild 2006 in Denver with a 20x20 booth to exhibit NYCORE products and allow CARE to get the message out to over 10,000 attendees.
- The Carpet America Recovery Effort was been selected as one of the "***25 Environmental Champions for 2005***" in a survey conducted by Interiors & Sources magazine.
- LA Fiber Company recovered to pre-Polyamid 2000 levels of 8M pounds per month.
- CARE hired its second employee (part-time) to help manage CARE's growth.
- Revamping of our award winning CARE web site with the help of Tricycle Inc.

CARE continues to publish a quarterly newsletter with a growing distribution that exceeds 1,000. The communication tool allows CARE to share the latest developments and information with all CARE stakeholders in a short, easy to read/scan format with links for more in depth information if desired. Past editions are archived on the CARE web site as well.

In addition to the investment already noted, carpet mills continue to focus on both design of sustainable carpet products and also the incorporation of post-industrial, post-consumer, and bio-based components into their product systems. Much of this is driven by the desire to meet the dual objectives of end of life management and recycle content as embodied in the ANSI Draft Sustainable Carpet Assessment Standard, NSF 140-2005 found at http://www.nsf.org/business/standards_and_publications/pdf/nsf_140-05-ds.pdf

Issues and Concerns

While 2005 was a great year with many accomplishments, it was not without challenges.

There are some CARE stakeholders who feel CARE is not moving quickly enough or in the right direction. To this concern we point to the data embodied in our progress charts along with the forecast for 2006. As confidence grows in our survey methodology, we can be more confident in our progress and the potential to project going forward.

There are some CARE stakeholders who feel the carpet industry has not honored their commitment as primary funders of this initiative. In response to this concern it should be pointed out again that the carpet industry has contributed a million dollars directly to CARE and has made tens of millions of dollars in investments in proprietary technology, projects and products. This would appear to be a strong commitment by the industry to honor its obligation. It is only in this past year that a clearer picture of the path forward is beginning to emerge out of the cloud of uncertainty.

There are some CARE stakeholders who believe our focus is only on waste to energy (WtE) as the primary outlet for post-consumer carpet. The survey results for 2004 and 2005 tell a different story as the percentage of carpet going to this outlet is holding steady at approximately 10%. Other than the kiln burn project, which has been terminated, there has been no effort expended by CARE in the area of WtE. This is clearly the outlet of last resort.

There are some CARE stakeholders who feel there is not sufficient emphasis on carpet being recycled back into carpet. We believe the lessons of history are important in terms of avoiding the same mistakes in the future. We know there have been two major failures by world class engineering companies in their attempt to recycle old carpet. Polyamid 2000 in Germany was a well funded project that had no requirement to generate a return on investment. This operation filed for bankruptcy in June of 2003. The joint venture between DSM and Honeywell in the late 90's, Evergreen Nylon Recycling (ENR), was another example of world class companies failing to get the formula right. We owe both efforts a debt of gratitude for their vision and determination to do what is right from an environmental perspective. In the case of ENR we have the unique chance to try it again with the commitment of Shaw Industries. It is a very expensive commitment and one for which CARE will do everything in our power to facilitate success. We know that not all post-consumer carpet can be recycled back into carpet. Therefore, we are looking for additional products and outlets.

The point here is that carpet is a sophisticated product. It is not easy to spin a quality fiber from recovered materials without extensive and expensive technology that takes time to develop. There are a number of carpet products in the marketplace today, and more under development, that contain varying degrees of post-consumer recycle content, including post-consumer carpet content. It typically takes a minimum of 2-4 years to bring a new carpet product to market based on proven technology. The use of recycle content derived from post-consumer carpet is not proven technology – it is being developed. These efforts coupled with the desire to meet requirements of the emerging Sustainable Carpet Assessment Standard (NSF 140) will lead to an evolutionary increase in both product availability as well as increasing recycle content.

As the scope of carpet reclamation and product evolution expands, CARE will face increasing challenges. Our dedicated Board is committed to guide CARE through this process. We have a huge educational challenge to get the word out. We need to let people know CARE exists, what it does and how to make use of

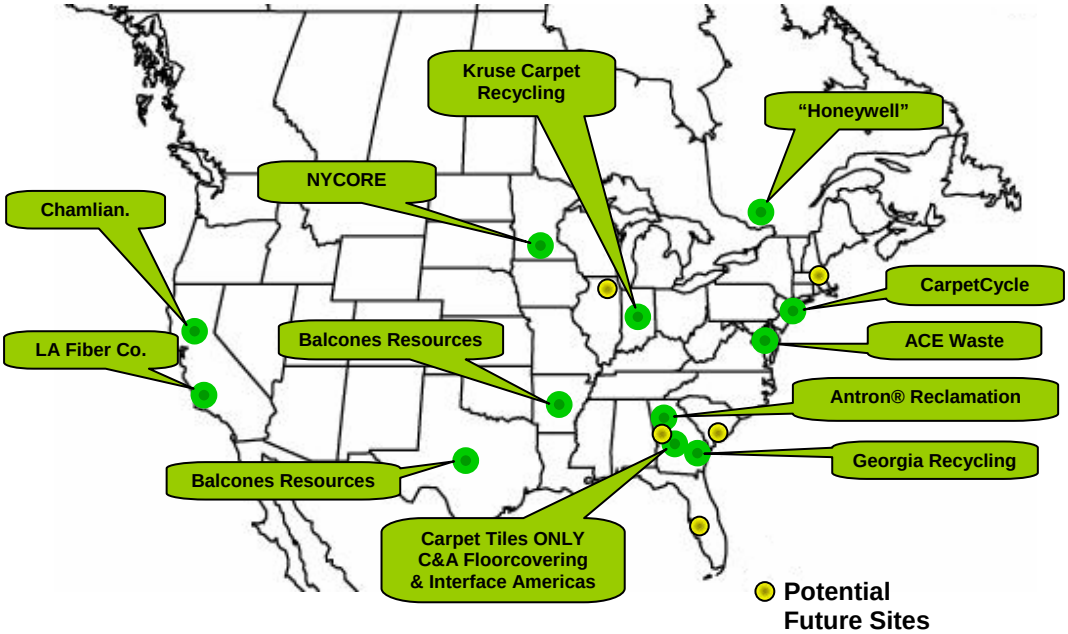
our resources. Part of this effort will be to engage both the public and private sector through the specification process - the focus of our Procurement Project. These model specifications for the public sector will be readily transferable to the private sector.

A new challenge that has surfaced this year as a result of the growth is how to insure the infrastructure is enabled to supply sufficient carpet to meet the growing demand. There is also a need for reliable identification technology. CARE is working closely with technology vendors, key recyclers and end users to facilitate economically sound solutions.

Carpet Reclamation Network

The first step in carpet reclamation is collections. Figure 10 is a map of the US highlighting the reclamation and collection sites that are on line at this time. The network has grown significantly in the last 12 months. In addition, interest continues to grow in adding collection points. While it is still true that there is no simple and routine way to recycle carpet, the ability and options to do so are increasing and the geographical options are expanding. Business models vary from location to location. It is also know that commercial glued down carpet is also the most difficult material to handle for a variety of reasons. Efforts are underway to address this issue. The good news is residential carpet represents between 65-70% of all carpet sold and provides much better yields and productivity per square yard. Most important is that locations and ability to recycle post-consumer carpet continues to expand.

Figure 10: Reclamation Centers*



* Visit the CARE website for the latest updates and contact information.

2005 3rd Annual CARE Conference – Callaway Gardens, Pine Mt. GA

CARE held a very productive annual meeting at Callaway Gardens in Georgia the first week of May 2005. Our attendance at the meeting was 82, up from 53 the previous year. A full set of speaker's slides and information may be found on the CARE web site. CARE's Recycler of the Year Award went to Wellman Inc. Wellman supports Georgia Recycling and uses post-industrial and post-consumer carpet as a feedstock for automotive applications. CARE honored Paul Ashman as CARE's Person of the Year. Paul is President of ERCS out of Boston, MA and has been actively engaged in the development of recycle outlets and logistics since 1993.

Figure 11: Phil Ammons (right) accepts CARE Recycler of the Year Award for Wellman from Andy Acho, VP of Ford Motor Company.

At the 2005 CARE 3rd Annual Conference, Vortex Composites issued a challenge to purchase pallets and they would contribute a portion of sales to CARE. As of this date only one mill has attempted to take advantage of the challenge. Unfortunately the system did not work out. While disappointing, we need more creative thinking along these lines. In addition, Vortex offered to build a plant in any state that stepped forward and committed to ten miles of sound barriers. Each mile of ten foot high sound barrier consumes about 1 million pounds of waste plastic. Thus far we have not been able to find a state partner.

CARE Entrepreneur Meeting 2005

Following the CARE Annual meeting, CARE hosted an invitation only entrepreneur forum in Tampa, Florida in November 2005. The purpose of the meeting was to connect entrepreneurs, discuss common barriers and develop suggestions to over those barriers. The event was sponsored by the Southern Waste Information Exchange (SWIX) along with Mohawk Industries, Shaw Industries, Antron® Fiber and StarNet®. Response was overwhelmingly positive. It turned out the attendance, despite the hurricane interruption of the original schedule, was 43 people. Perhaps the more interesting observation is that ~50% of those in attendance were new to CARE since the May 2005 Annual Meeting.

Awards

The Carpet America Recovery Effort was been selected as one of the "***25 Environmental Champions for 2005***" in a survey conducted by Interiors & Sources magazine. CARE was nominated as a champion in recognition of the work it has done to prevent carpet from overburdening our landfills. All 25 Environmental Champions were featured in a special Fall 2005 issue of Interiors

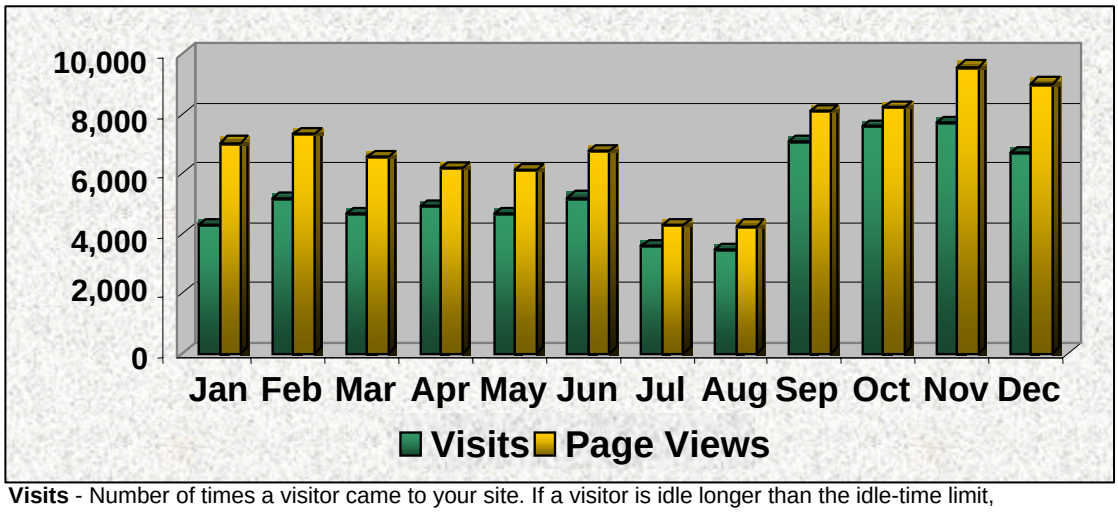
& Sources. This is an exciting acknowledgment of all that CARE has been able to accomplish and is an honor for everyone involved in the organization. The fact that we reported over 100 million pounds of landfill diversion of old carpet in 2004 starting from almost nothing in 2002 speaks to what has been accomplished in a short time. CARE members are committed to building on the solid foundation of environmental stewardship for which the carpet industry is recognized as a national leader. This recognition is a reflection of the dedication and professionalism of the people and companies of CARE.

Figure 12: Paul Ashman of ERCS (center) receiving the 2004 CARE Person of the Year award from CARE Board Chairman Frank Hurd (right) and Robert Peoples, CARE Executive Director.

Web Statistics

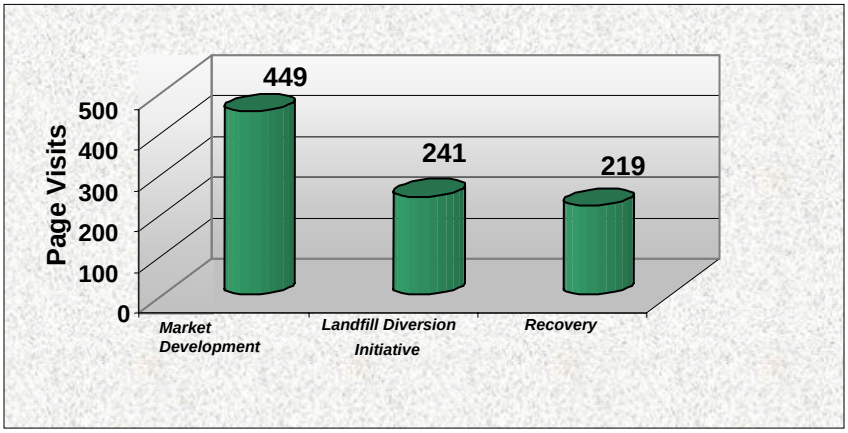
CARE maintains a very active web site. Figures 13 & 14 give the statistics for 2005.

Figure 13: CARE Website Statistics 2005



Visits - Number of times a visitor came to your site. If a visitor is idle longer than the idle-time limit, WebTrends assumes the visit was voluntarily terminated. If the visitor continues to browse your site after they reach the idle-time limit, a new visit is counted. The default idle-time limit is thirty minutes.
Page Views - Hits to files designated as pages. Supporting graphics and other non-page files are not counted.

Figure 14: Top webpage visits in 2005



Carpet Industry Products and Programs

C&A / Tandus

In the early 90's, C&A, a Tandus Company, developed patented technology to "close-loop" recycle post consumer carpet and manufacturing waste into recycled content backing for new floor coverings. The company has an active buy-back program offering customers financial incentives to return and recycle their old vinyl-backed carpet. To date, more than 100 million pounds of reclaimed vinyl and vinyl-backed carpet has been recycled in the program. All C&A products are 100% recyclable and the company's sustainable warranty guarantees to customers that all carpet returned will be recycled in its entirety and that no portion will be landfilled, incinerated (including waste-to-energy) or disposed of in any other way.

C&A introduced the ethos™ cushion product in 2004. The overall recycled content in the product line ranges from 30 to 52% and includes a minimum 30% post consumer content in every style. The ethos secondary backing, the first of its kind, is made from plastic film recovered from discarded auto windshields and safety glass. The product meets or exceeds the performance of similar carpeting made with traditional PVC backings but does not contain chlorine. Ethos is also 100% recyclable back into carpet using C&A's existing recycling processes and facilities. Additionally, C&A offers ER3 tile and ER3 six-foot cushion products that contain a minimum of 30% overall recycled content. The secondary backing of these products is made from post consumer vinyl backed carpet and manufacturing waste. ER3 and ethos floor covering products have received recycled content and Environmentally Preferable Product (EPP) certification from Scientific Certification Systems.

C&A manufactures high-performance modular tile and six-foot structured back carpeting for the commercial market. As part of Tandus, C&A works in tandem with sister brands Monterey and Crossley to provide customized interiors solutions for its customers.

INVISTA

INVISTA, maker of Antron® carpet fiber, understands that everything manufactured has some impact on the environment, and has pioneered the Total Environmental Impact (TEI) Index as a tool to determine the total environmental impact of Antron® carpet fiber and its manufacturing process. The index was calculated by comparing current data against several external and internal life cycle studies. Based on this assessment, the TEI of Antron® carpet fiber is 30 percent less than levels typically found in the industry.

INVISTA began offering carpet recycling services in 1991 and opened the first nationwide carpet reclamation program that recycles all types of carpet for business in Calhoun, Ga., in 1999. Since 2001, the Antron® Reclamation Program has collected more than 57 million pounds of used carpet, resulting in more than 106,000 cubic yards of conserved landfill space.

INVISTA's nationwide carpet reclamation program is open to all dealers and end-users. INVISTA will provide containers and trailers for transport, or customers can deliver post-consumer carpet directly to the facility. The program will accept any used carpet and installation scraps that do not include contaminants or hazardous substances including ALL fiber types, ALL carpet construction types, and from ANY manufacturer; NO carpet accepted by the Calhoun facility will be sent to the landfill. Recycled material from the program may be used in new carpet, carpet cushion, filtration devices, automotive parts, packaging materials and furniture.

Because end-users, architects, designers and commercial dealers want to recycle, INVISTA has made its program more flexible in hopes that more people can take advantage of this environmentally-preferable option. Dealers and end-users interested in recycling should contact their Antron® fiber consultants for more information.

INVISTA released new Antron® fiber Green CSI Specifications to assist customers working on "green" or USGBC/LEED rated building projects. The new specifications ensure the choices made by architects and designers fit the environmental goals of their projects. To obtain CSI-formatted reclamation specifications or to begin reclaiming used carpet from your project, visit www.antron.net or call 1-877-5-ANTRON.

Interface

Interface diverted 17 million pounds of material from landfills in 2005 through its ReEntry® carpet reclamation program. Nearly 84 million pounds of material have been diverted from landfills through ReEntry since 1995.

The amount of reclaimed material that was recycled increased from 60% to 71% in 2005 and material going to energy capture and conversion processes decreased by 9%, while 1% of reclaimed products were repurposed.

Interface reclaims vinyl backed tile products as feed stock for its GlasBac® RE recycled vinyl tile backing products, all of which are third party certified to be Environmentally Preferable Products (EPP) by Scientific Certification Systems. In 2005, Interface manufactured 423,000 square yards of GlasBac RE, bringing the total square yards manufactured to more than 2.2 million since 2000.

Realizing that nearly 50% of a carpet tile is vinyl backing that is petroleum and energy intensive, Interface launched a new multimillion dollar carpet backing process called Cool Blue™. It will increase Interface's use of traditional feed stocks while adding new waste materials into the mix that were previously restricted due to technological constraints. Cool Blue will increase growth volumes in the GlasBac RE business, and provide opportunities for Interface to further advance on the path to sustainability by further unhooking its processes from the well head.

Early projections for Cool Blue show potential for diverting more than 20 million pounds of plastics from landfills annually and the possibility of disconnecting up to 60% of the raw material requirement for the manufacture of GlasBac RE from the oil well in 2006, thereby eliminating virgin vinyl from the GlasBac RE line.

Cool Blue helped Interface win the 2005 Environmental Business Journal (EBJ) Technology Merit Award and because it is partially powered by landfill gas, Interface also received the U.S. EPA's Landfill Methane Outreach Program's (LMOP's) 2005 Energy Partner of the Year Award.

J&J / Invision – divisions of J&J Industries

Core Extrusion: J&J / Invision derives recycled content in Encore® SD *Ultima*® from two sources. In addition to the recycled content in the pellets we purchase, we add our own post-industrial recycled content by re-pelletizing transition yarns (yarn created when an extruder is changing from one color to another) from our extrusion process.

IDCE Sustainability Index: J&J / Invision has been audited by a third party as having met the standard of the eLCie Corporate Sustainability Index. This index is designed to provide a way for companies to communicate their commitment to protecting and preserving our environment.

Internal Recycling Program: By promoting a waste reduction program in both the office and manufacturing environments, J&J / Invision has reduced its internal waste by over 85%. As part of initial training each associate is educated on our waste reduction program and each office associate receives a blue recycling container for paper recycling.

Storm Water Management Area: Construction of the storm water management area donated by J&J / Invision and designed by the Nature Conservancy was completed by the City of Dalton. This area receives and promotes natural treatment of all storm water that falls upon the J&J / Invision campus. Our intent is to use the area as a teaching tool for students and as a demonstration of the socially responsible use of corporate property.

Sustainable Carpet Assessment Draft Standard: For the last two years J&J / Invision has been involved in the creation of the Sustainable Carpet Assessment Standard. J&J / Invision has volunteered to be a part of the consensus body that will begin work to complete the transition of the draft standard into a national standard recognized by the American National Standards Institute (ANSI).

Mannington

Mannington has long driven investment and research into reducing manufacturing waste and increasing efficiency. By evaluating all our products and processes against our corporate goal of becoming a net use of waste, we have been able to make company-wide improvements that get us closer to that goal each year. And by implementing ISO 14001 in both our Georgia carpet and New Jersey commercial resilient facilities, we have proven that our entire process exceeds stringent environmental standards.

ArtCraft carpet tile, introduced in 2003, has been a great success both for its colorful aesthetic and use of 100% post-production yarn. We've added to the line with different patterns, Modern Primitives and StringWorks, and this year we added ArtWorks. ArtWorks adds a dominant color to the ArtCraft look, and is available with our new Infinity RE backing. Both hard-surface and carpet from our manufacturing processes are recycled into the Infinity RE backing. We are also able to reuse pre-consumer carpet in Relay, the first hard-surface flooring to contain 40% recycled content – specifically recycled carpet.

In the coming year, we will continue to invest and research new technologies and processes to increase recycled content and reduce waste. And we will continue to work with organizations like CARE who are working to improve environmental performance in our industry. Because after all, actions speak.

Milliken

Milliken—Reclamation: With an environmental policy in effect for more than four decades, Milliken Carpet initiated regenerative efforts to ensure zero waste and no carpet or components to landfill in the early 1990s. Since 1999 Milliken has

achieved Zero Waste to Landfill from carpet manufacturing. The No Carpet to Landfill Pledge is now standard.

All Milliken carpet products are 100% recyclable and old carpet is evaluated at the end of its useful life to determine the highest environmental value recovery possible. Rejuvenating modular carpet through the unique Earth Square® closed loop renewal process is the first and highest level of consideration, adding another life product cycle. A partnership for donations a national non-profit promoting reuse on every level, offers another alternative to landfills. When renewal or reuse options are exhausted, closed-loop recycling that reclaims components into new carpet is employed as the third line of response.

Products: Milliken seeks high performance products with a negative environmental footprint. Comfort Plus cushion backing extends carpet life up to 50% by absorbing wear, protecting the carpet face and ensuring better appearance and longer performance. It reduces fatigue and improves thermal insulation, cutting energy costs. All Comfort Plus backed modular carpet is available with ES (engineered for Sustainability) backing, which contains up to 35% recycled content based on total product weight. Recycled content is 89% Post-Industrial, 10% Post-Consumer, and 1% rapidly renewable resources. TractionBack®, a patented bio-based high-friction coating, allows carpet installation without traditional or peel-and-stick adhesives, reducing landfill waste, and eliminating VOC concerns. All Milliken carpets have been PVC-free since 1986, which removes environmental and regulatory concerns about reuse and disposal associated with products containing these chemicals.

Mohawk Industries

Mohawk Industries is a staunch supporter of CARE and its goals for Post Consumer carpet landfill diversion. Through a variety of programs and actions, Mohawk Industries has furthered those goals. Mohawk supports CARE with direct funding as well as with numerous Post Consumer diversion programs.

New for 2005, The Mohawk Group has developed a broad array almost 100 broadloom products in 3 commercial brands, which contain an average of 15% Post Consumer content based on total carpet weight. This innovative program promises to keep millions of pounds of Post Consumer materials out of landfills each year.

Another new development in 2005 was the creation and implementation of a National Carpet Recovery initiative. This far reaching initiative employs external as well as internal resources for the recovery and recycling of all Post Consumer carpet products on a nationwide basis using the logistics an infrastructure of the Mohawk distribution system.

A third noteworthy 2005 initiative is the development of a proprietary carpet related product, manufactured internally, which is made from 100% carpet and carpet related recovered materials, including Post Consumer carpet. This

initiative has several unique characteristics which include the concept of a closed loop recycling system by which this product can be recycled into the same product over and over again. A second very noteworthy element of this initiative is the concept of Landfill mining. Portions of this product's constituents are made from material mined from the Dalton/ Whitfield Co. landfill, thereby reducing the landfill burden.

Mohawk Industries prides itself in supporting CARE with unique solutions in its quest for National Landfill diversion.

Shaw Industries

Shaw Industries has been collecting, reusing, and recycling over 60 types of post-industrial waste since 1985. As the largest producer of carpet, Shaw is committed to landfill reduction. Contract customers increasingly ask for recycling of post-consumer carpet pull-ups and Shaw has increased its capabilities in this area.

In 1999 Shaw won the Georgia Governor's award for pollution prevention by introducing a polyolefin carpet tile backing, EcoWorx, which is recyclable back into the same backing again and again. First generation carpet tile has only now begun to be returned for recycling. This product will help CARE to realize its goals because Shaw wants every square yard it can get returned for recycling to reduce impacts and cost. Shaw won the 2003 Presidential Green Chemistry Challenge Award, sponsored by the US EPA and the ACS for the EcoWorx product.

Since then Shaw has been working on additional recycling investments. We will open our first waste-to-energy gasification plant in Dalton, GA shortly. It is fueled in part by 16,000 tons of carpet waste. Gasification sequesters the greenhouse gas pollutants in the ash and provides an emissions profile similar to natural gas. The proliferation of carpet gasification will help to create the carpet collection infrastructure so vital to CARE's goals.

The latest Shaw environmental investment is the purchase of both the Honeywell and DSM interests in the Evergreen Nylon Recycling unit at Augusta, Georgia. Plans are to reopen the facility as soon as possible. Several key hires from outside Shaw have rounded out our Evergreen teams. Most notably, Russ DeLozier has come on board to create the collection network that will feed the facility, and provide post-consumer carpet to other recycling and recovery concerns. Russ has also joined the CARE Board. Shaw may collect as much as 300 million lbs. of post-consumer carpets of all types annually.

CONCLUSION

The lessons of the past four years are now becoming apparent and, more importantly, understood. As a result of a significant amount of effort and many accomplishments in 2005, CARE was able to report a 108 percent increase in

the documented level of diversion from landfill from 2004 to 2005. Future potential looks excellent for continued growth as a result of both carpet industry efforts as well as those of the entrepreneurial community. It appears we have a viable path forward. While many details are held close for competitive reasons, the identified routes will continue to enable us to grow this new industry. At the same time, international demand for resources will further accelerate the recovery of this value raw material stream. As a result, CARE believes the chances of achieving our 2012 goal is very realistic.

This is a complex challenge we face and it will take the collective wisdom and commitment of all those who have supported CARE in the past. More importantly, the growing ranks of our new members and sponsors reflect the potential off this new industry. A heartfelt thanks to all those who serve and support CARE and handle post consumer carpet!

CARE website at www.carpetrecovery.org.

APPENDIX 1

Carpet America Recovery Effort (CARE) Survey for 2005

The Carpet America Recovery Effort (CARE), a voluntary initiative to divert post-consumer carpet waste from landfills, has contracted with Weston Solutions, Inc. (WESTON) to estimate the level of carpet recycling achieved in 2005. This survey is designed to help in that effort, and your response is very important to us. In addition, your responses will help identify ways in which CARE can help you make your business better. One of the reasons that WESTON was contracted to do this work is to preserve the confidentiality of the data you provide. WESTON will not release ANY company-specific data to CARE or any other entity without that company's permission**. Therefore, you can be assured that the answers you provide herein will remain confidential.**

Type of Company
Please select the type of company from the list below, based upon the descriptions provided. If your company performs more than one function, check all boxes that apply.

- ☐ Collector – A company that collects used carpeting from the point of generation and transports it to a processing or waste management facility.
- ☐ Sorting Facility – A facility that separates waste materials (including used carpeting) from a mixed waste stream. The end result of this process is used carpeting that is separated from other materials.
- ☐ Processor – A company or facility that takes used carpeting (whether handled by a sorting facility or brought directly by a collector) and processes it for use as a feedstock in a manufacturing facility.
- ☐ Manufacturer – A company or facility that utilizes processed carpeting materials and transforms them into other products, or uses them as raw materials in a manufacturing process.

Quantity of Material Processed
Fill out the information requested below regarding quantity of material processed. If precise data is not available, please provide best estimates. **NOTE: Quantitative data should be in tons and for calendar year 2005 only.**

1. Tons of used carpet handled by your company (i.e. collected, processed, sorted and/or used in manufacturing) in 2005: _____
2. Of the used carpeting material receive provide an estimate of the split between post-consumer (material recovered after being used at a residence or commercial establishment) and post-industrial (scrap material from a manufacturing facility): Post-consumer: _____% Post-industrial _____% (Must total 100%)
3. To the extent known, identify the geographic area from which material comes from. Describe the geographic area, or list the states:

_____

_____

4. Types of facilities to which your company sends material derived from carpeting after any processing, sorting or manufacturing (check all that apply and identify the percent of output sent to that type of facility):

   - ☐ Sorting facility: _____%
   - ☐ Processor: _____%
   - ☐ Manufacturer: _____%
   - ☐ Cement kiln: _____%
   - ☐ Waste-to-energy facility: _____%
   - ☐ Landfill: _____%
   - ☐ Other: _____%

5. To the extent known, please indicate the fraction of the output from your facility that is sent to customers in the U.S. versus customers overseas:

   - ☐ U.S. _____%
   - ☐ Mexico: _____%
   - ☐ Canada: _____%
   - ☐ Europe: _____%
   - ☐ Asia: _____%
   - ☐ Other/Unknown: _____%

6. If you are a manufacturer, please indicate the end-products produced from used carpeting material at your facility:

   - ☐ Carpet padding
   - ☐ New carpet
   - ☐ **Molded or extruded products**
   - ☐ Injection-molded plastic parts
   - ☐ Plastic pellets
   - ☐ Other (describe):_____

7. Describe ways in which CARE might be able to help your business:

   _____

   _____

Company Information (Optional)
Company Name: _____
Address: _____
_____
_____
Contact Name: _____
Telephone Number: _____

E-mail Address: _____

NOTE: This information is optional and is only to be used for the purposes of follow-up if questions arise about responses provided. To be eligible for Amazon.com gift certificate, name and e-mail address must be provided.