# Table of Contents

CARE Mission Statement, Vision and Core Values ................................................................. 3
CARE 2016 Leaders .................................................................................................................. 4
Message from the CARE Chairman of the Board of Directors ............................................... 5
Message from the CARE Executive Director ........................................................................ 6
Key Results for 2016 ................................................................................................................. 7
CARE Annual Survey Results ............................................................................................... 14
Evaluation of Progress, 2016 Summary ................................................................................ 15
2016 Summary ......................................................................................................................... 26
Survey Methodology ............................................................................................................... 27
CARE Outreach Results, 2016 ............................................................................................ 29
Appendix 1, CARE Annual Survey ....................................................................................... 34
Appendix 2, Definitions ......................................................................................................... 45
Appendix 3, CARE Board of Directors, 2016 ..................................................................... 48

Table 1: VPS Output Destinations ......................................................................................... 12
Table 2: VPS Face Fiber Breakdown .................................................................................... 13
Table 3: Post-Consumer Carpet Recycling & Diversion Statistics, 2002-2016 .................... 18

Figure 1: California Post-Consumer Carpet Collected and Recycled .................................... 10
Figure 2: California Annual Performance Trends ................................................................. 11
Figure 3: 2015 & 2016 CSE Output ...................................................................................... 13
Figure 4: CSE Inventory Levels .......................................................................................... 14
Figure 5: Mass Balance Calculation .................................................................................... 19
Figure 6: Historical Post-Consumer Carpet Diversion, 2002-2016 .................................... 19
Figure 7: Outlets for Post-Consumer Carpet Collected ..................................................... 20
Figure 8: End-Product Markets .......................................................................................... 21
Figure 9: Post-Consumer Carpet Fiber Type ....................................................................... 22
Figure 10: Post-Consumer Carpet Fiber Output Trends ...................................................... 23
Figure 11: Total Employment .............................................................................................. 24
Figure 12: Reporting Regions in United States .................................................................... 24
Figure 13: Collection of Carpet by Region .......................................................................... 25
Figure 14: Respondents View of Whether CARE is Meeting Needs .................................... 26
Figure 15: CARE Website Visits .......................................................................................... 31
Figure 16: CARE Map Views ................................................................................................ 32
Figure 17: CARE AB 2398 Page Views ............................................................................... 32
Figure 18: CARE New vs. Returning Users ......................................................................... 33
Mission Statement
The mission of CARE is to advance market-based solutions that increase landfill diversion and recycling of post-consumer carpet, encourage design for recyclability and meet meaningful goals as approved by the CARE Board of Directors.

Vision
Post-consumer carpet diversion and recycling are economically, socially and environmentally sustainable for all stakeholders.

Core Values
We believe in:
• Market-Based solutions
• Entrepreneurship
• Hierarchy of Waste Management
• Sustainable practices (economic, social and environmental)
• Resource conservation
• Transparency
• Multi-stakeholder collaboration
• Professional ethics and integrity
• Anti-trust compliance
CARE 2016 Leaders

Sustainability Leaders

Aquafil USA
Beaulieu of America
Interface
J & J Industries
Masland Carpets
Milliken & Company
The Mohawk Group
Shaw Industries
Tandus Flooring
Universal Fibers
Wellman Plastics

Friend of CARE

Polymers Center of Excellence

CARE Members

CARE now has 181 members- please go to www.carpetrecovery.org for a complete list of CARE members.
Message from the Chairman of the CARE Board of Directors

2016 has been a challenging year – interlaced with technical advances and California frustrations. As an organization, CARE grew - welcoming Dana Stover and Melanie Radtke. CARE grew its scope of financial stewardship – and passed three significant audits: CalRecycle, Aprio [formerly HA&W], and Winter & Scoggins without significant findings.

As Chair, I serve the Board in several ways. Is the organization true to its mission and By Laws? Does it have a well-chosen strategic plan? Is its operational leadership energized, skilled and street-smart? Are its stakeholders well represented and is there due process for all voices to be heard and to contribute? Finally, is there transparency and high standards of ethical conduct?

The recycling industry is known to be rough and tumble. Global oil prices [and consequently virgin polyester] have deterred traditional market based solutions, such as those that operate for post-consumer Nylon-66. Nevertheless, CARE’s All Fibers Task Group is actively pursuing several dozen new and promising technologies – with progress noted and confidence about results to follow.

The carpet industry deserves noteworthy recognition. On a voluntary basis, it pledged to support the economically challenged network of collectors, sorters, and entrepreneurs for two years. That timeline has blown by – and the support continues – as the need continues. The industry has contributed several of its best to wrestle with the challenges of sustainable stewardship a.k.a landfill diversion and purposeful recycling. Finally, the industry has spent an incredible number of hours through CARE Directors serving on the Stewardship Planning Committee [SPC] and CEOs serving on the Sustainable Funding Oversight Committee [SFOC]. This service came with the clear intent of enabling CARE to fulfill its role as the Stewardship Organization chosen under California AB 2398 legislation.

On this last point, I need to publicly express disappointment. There is a serious disconnect and dysfunction when Stewardship Plans such as those a) CARE has put forth, b) CalRecycle has reviewed and approved, c) CARE has applied diligent efforts to execute and administer, then result in d) condemnation and punishment. There is need to recognize neither CARE nor the carpet industry control global macroeconomic drivers. CARE has never been a quitter. It was formed amidst a crucible of crisis in 2002 and has consistently stood at the crossroads bridging industry, recyclers, regulators and NGOs. Where the agenda of one is served and not the common good, there is grave cause for concern.

2016 is in our rear-view mirror. I’m proud of CARE’s numerous accomplishments and applaud the tireless work of our Executive Director, his highly talented staff, and by no means least the volunteers who served as Directors, Committee members, and Advisors. They are CARE’s spirit and charisma. 2017 will be a year to watch carefully. Much will be decided that is beyond our control. For what we can get our arms around, we will engage, wrestle with, and resolve with the vision that has led us for 15 years.

Sincerely,

Brendan F. McSheehy
Chairman, Board of Directors
Message from the CARE Executive Director

Dear CARE Stakeholders:

Happy Birthday CARE – 15 years of building a new industry! Unfortunately, looking back at 2016 it seems obvious we have endured yet another tumultuous year. As CARE prepares to celebrate our 15th year, we recognize the markets are the worst we have ever seen. While many factors contribute to this deep cycle, they remain fundamentally tied to the low price of crude oil. In 2016 we saw mounting pressure on recyclers outside of CA resulting in shutdowns at the end of the year. The CARE annual survey tells a difficult story of retraction and loss of fiber-to-fiber outlets.

In recognition of the continuing challenges, carpet industry leadership elected to continue the VPS program in 2017. Reinforcing the industry’s commitment to the recycling community, VPS is once again being reconsidered for renewal in 2018. Recognition of tough times and a commitment to the partnership with the recycling community ensures continued progress. VPS recipients are gratified by this decision, but also recognize recycling and carpet communities must continue to work together to solve the fundamental challenges facing carpet recycling.

At the same time the CARE Board continues to look for new products and market outlets for post-consumer carpet materials. Carpet is a complex system of materials engineered to deliver performance. That very systems design makes recycling difficult. Efforts to identify new technologies for processing, new products to absorb these materials, and markets to buy them remains a top priority for CARE. While progress is painfully slow, progress is being made.

On the California front, things have become even more difficult. Having been found non-compliant for three years in a row, CalRecycle decided to issue civil fines against CARE totaling $3.25M. In addition, the new 5-Year Plan was rejected in December. Facing unlimited payouts for subsidies as recycled output grows and increasing operational costs, CARE has reached a crossroads in California. The first six months of 2017 will determine the future trajectory of this organization and have a significant impact on the carpet industry in general. Despite all the negative news from California, good progress is anticipated in 2017 for added processing capacity in the State and significant growth in recycled output is expected due to the aggressive subsidy actions taken in late 2015 and grants that have enabled new investment. It takes time for those investments to come on-line and we hope that CalRecycle understands the development cycle and sees the benefits starting to accrue. While CARE does not control the price of oil or other macroeconomic factors, we have taken actions where we can to drive change and growth.

Finally, the dedication of our entrepreneur community represents the true spirit of America. I want to thank each one for you for your trust, your commitment and support as we continue to build this new industry. To our CARE Team, thank you for all you do. To my Board of Directors and the hard-working Sustainable Planning Committee (SPC), I deeply appreciate your trust and support.

Sincerely,

Robert Peoples, Ph.D.
Executive Director, CARE
Key Results for CARE in 2016


CARE has continued to grow in 2016 and manages three distinct operations: CA Carpet Stewardship Program, The Voluntary Product Stewardship Program (VPS), and CARE Core Operations.

The VPS program launched on January 1, 2015 and was renewed for 2016 with a budget of $4.5 million. VPS was designed as a bridge until new products and markets could be developed for PET post-consumer carpet (PCC). Macroeconomic challenges in post-consumer carpet processing and markets dictated the need for an additional year of VPS Program support, which was approved for continuation in 2017.

CARE continues to serve as the carpet stewardship organization (CSO) that manages and implements our CA Stewardship Plan. On April 1, 2016, the assessment increased in California from 10 cents to 20 cents per square yard. On January 1 of 2017, the assessment increased to 25 cents per square yard. This represents a 500% increase in the assessment since the program began in July 2011.

When all three elements of the operation are combined, CARE is now responsible for administration of a $30 million operational budget. In the spring of 2016, we hired Melanie Radtke as our first fulltime Financial Director.

CARE underwent three independent audits in 2016. The first was an audit of CARE core operations. The second was an audit of our AB 2398 financials. Finally, we also received a performance audit as required by CalRecycle. The latter is an audit regarding the requirements of the AB2398 statute relating to reporting and accomplishments. There were no material findings for CARE under any of the audits performed. CARE has now had audits performed in 2013, 2014, 2015 and 2016. Since CARE began routine audits in 2013, there have been no material findings. This is a testament to CARE’s financial structure, oversight, and internal controls.

CARE Operations

The financial operations of CARE are managed separately for each of its programs. The operations of CARE have a separate and distinct financial ledger, budget, income statement, and balance sheet as does the VPS and AB 2398 programs.

The 2016 Annual Report provides a complete financial statement and summary of operations for CARE only. Please see the separate 2016 California Annual Report for details on the CA Program which will be released to CalRecycle on July 1, 2017.

CARE Operations Income and Expense Statement

- Net Income (revenues minus expenses) through December 2016 was $180,577.
- Expenses were under budget for the year while revenue was above budget.
- Due to a larger than budgeted net income for 2016, the CARE Board approved a 90% reduction in membership dues for Entrepreneur’s in 2017.
CARE Operations Balance Sheet:

- Cash balance at end of December 2016 was $660,368 vs. $942,442 at the end of 2014.
- Members’ equity was $729,073, up by $180,579 from $548,494 in December 2015.
- CARE maintains a minimum annual $275,000 cash reserve.

Business Results, 2016

- In 2016, CARE finished the year with 181 members.
- CARE successfully managed the California AB 2398 program as the Carpet Stewardship Organization.
- CARE successfully managed the second year of the Voluntary Product Stewardship Program in 2016.

2016 CARE Annual Survey Results of the U.S. Carpet Recycling Industry

- Employment decreased from 1,295 in 2015 to 1,215 in 2016, a decrease of 6%.
- Total post-consumer carpet discards, based on sales, were estimated at 3.5 billion pounds.
- Post-consumer carpet discards were estimated at 11 pounds per capita in 2016.
- Total gross collections were 488 million pounds, down from 520 million pounds in 2015.
- Gross post-consumer carpet collection equated to 1.5 pounds per capita for 2016.
- Gross recycle ratio (gross collected/total discards) was 14%. This ratio decreased 1% from 2015.
- Total Materials flows were as follows:
  - Recycled Output (reuse plus recycle) was 33% of gross collections
  - Waste-to-Energy (WtE) represented 11%
  - CAAF and kiln output reported at 18%
  - 72% of recycled materials went to resin and molding applications, up from 65% in 2015
  - Carpet face fiber use was 3% of recycled output, down from 13% in 2015
  - Carpet backing use was 8%
  - Other applications represented 18% of recycle uses.
- 98% of the post-consumer carpet collected was processed in the United States.
- 90% of respondents felt CARE is meeting their business needs
- Since it was founded in 2002, CARE members have diverted over 4.6 billion gross pounds of post-consumer carpet from landfills in the United States.
- Greenhouse gas equivalents saved was calculated to be 103,840 mTCO2E using the 2016 EPA WARM model: [www.epa.gov/warm/versions-waste-reduction-model-warm#WARM Tool V14](http://www.epa.gov/warm/versions-waste-reduction-model-warm#WARM Tool V14)
- GHG savings is equivalent to enough energy to power 17,000 homes for the year and conserving 436,000 gallons of water
California AB2398 Results for 2016

In 2016, the California Carpet Stewardship Program completed five years of operation. Launched in 2011, CARE has helped California recycle over 200 million pounds of post-consumer carpet to date and kept more than 400 million pounds out of California landfills through recycling and other diversion efforts.

In response to dynamic market conditions and macroeconomic challenges in 2015, the California Program adopted a series of changes investing in market development by adjusting subsidies for collections, carpet tile, calcium carbonate and Tier-2 non-nylon products, as well as incorporating grant funding, and expanding collections, marketing, education and outreach efforts:

- CARE provides subsidies to incentivize increased diversion, recycling and reuse. All the California Program's funding is derived from the carpet assessment charged to California consumers. Subsidies are the basis of the market-based approach to supporting the recycling industry, and make up the bulk of the Program's expenses. In 2016, CARE's California Program invested $14.5 million in subsidies, grants and other incentives to accelerate recycling and diversion efforts in California.
- To further spur market development, in 2016 CARE’s California Program awarded $2 million in grants to support capital investments and product testing, increasing California’s recycling capacity by an estimated 30%, creating over 1 dozen new California jobs and greater stability to the industry.
- Additional market development efforts include new product procurement grants to increase demand for recycled carpet products, testing grants to explore and expand the uses for post-consumer recycled carpet content and technical assistance to develop new products, markets and consumer demand.
- The recycling industry has seen many challenges lately, from world commodity prices to shifting business trends. CARE continues to work to meet the requirements of California’s Carpet Stewardship law and to support the retailers, processors and manufacturers that make carpet recycling possible.

In California in 2016:

- 107 million pounds of post-consumer carpet was collected before it could go to landfill (up 4% from the 103 million collected in 2015.)
- 37 million pounds of recycled output was produced (up 6% over the 35 million pounds recycled in 2015.)
- 11% of total estimated California post-consumer carpet discards were recycled in 2016, falling short of the 16% recycling goal.
Additional Indicators

CARE has been working since 2011 to solve some of the industry’s challenges. The Program has seen progress in recent months.

- To increase carpet collection, the law requires that collection be convenient for California’s citizens. CARE provides support and technical assistance to drop-off sites across the state; California is the only state with this kind of program. The number of CARE-supported California drop-off sites increased to 33 in 2016 from 23 sites in 2015, a 43% increase. New sites continue to be added throughout 2017. Additional collection sites are supported directly by private collector sorter entrepreneurs, estimated at over 200 sites. The number of pounds collected by CARE drop-off sites in 2016 increased by 74% over 2015.

- There has been a significant increase in the number of recycled carpet products and vendors, driven by the California program, with more than 25 products now available from 10 vendors. See the CARE Product Catalog and Buy Recycled pages for details. https://carpetrecovery.org/products/

- CARE has launched the DoubleGreen™ designation to encourage the inclusion of post-consumer carpet in secondary products. DoubleGreen™-labeled products contain recycled California post-consumer carpet material plus at least one other post-consumer recycled material.

- CARE’s calcium carbonate subsidy added in 2015 increased recovery and use of calcium carbonate in the manufacture of secondary products totaling 2.4 million pounds in 2016, up from just 61 thousand pound in 2015.

- Although a smaller portion of the carpet waste stream, carpet tiles are up to 100% recyclable representing an important opportunity to increase recycling rates. CARE carpet tile subsidies helped to recycle over 1 million pounds in 2016, an increase of 27% over 2015.
Since the start of the California program in 2011:

- **601 million pounds** of post-consumer carpet was gross collected by collector sorters entrepreneurs
- **486 million pounds** of post-consumer carpet was net diverted from California landfills as reuse, recycled output, energy recovery, export or other methods
- **207 million pounds** of post-consumer carpet has been reused or recycled
- **41 million pounds** of recycled output have been manufactured into new Tier 2 non-nylon products such as carpet cushion, underlayment, pellets, insulation, signage, erosion control and other products
- **$36 million** in assessment funds have been invested in recycling efforts to date.

**Figure 2: CA Annual Performance Trends for Gross Collections and Recycled Output Over Time**

**VPS Program**

The VPS Program began in January of 2015 and was designed to operate for two years. The VPS Program is market-based, and Collector/Sorter Entrepreneurs (CSEs) participants agree to accept and manage all applicable post-consumer carpet, regardless of polymer type or primary materials or construction. VPS is funded by members of the Carpet and Rug Institute. The VPS program incentivizes sorters of post-consumer carpet who ship and sell material to processors in the United States and internationally. The program’s budget for 2015 was $4.5 million, all of which was used in the first year. The program was approved for 2016 with a financial commitment of $4.5 million.

Major challenges continued for CSEs in 2017. The price of crude oil remained low in 2016. This resulted in a continued decrease in demand for products and raw materials derived from post-consumer carpet. The VPS Program assisted CSEs in improving their business results in a tumultuous time. Many in the CSE community credit the VPS Program with their ability to remain operational in 2016 and into 2017. The tables and graphs below represent quarterly results from 2016.
The VPS Program funds two types of output: Type 1 and Type 2. Material that is re-used, shipped internationally and shipped inside of the U.S. is considered Type 1 and is funded at $.02 per pound of output. Material that is sent to a waste to energy facility, a pyrolysis application, cement kiln, and CAAF is considered Type 2 and is funded at $.01 per pound of output.

Table 1: VPS Output Destinations

<table>
<thead>
<tr>
<th>Pounds of Output</th>
<th>Q1 2016</th>
<th>Q2 2016</th>
<th>Q3 2016</th>
<th>Q4 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadloom Re-Used ($0.02)</td>
<td>9,000</td>
<td>36,461</td>
<td>51,531</td>
<td>27,258</td>
</tr>
<tr>
<td>Carpet Tile Re-used ($0.02)</td>
<td>377,437</td>
<td>99,400</td>
<td>159,755</td>
<td>335,139</td>
</tr>
<tr>
<td>Shipped Internationally ($0.02)</td>
<td>-</td>
<td>656,019</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Shipped inside U.S. ($0.02)</td>
<td>42,976,715</td>
<td>42,671,152</td>
<td>43,778,520</td>
<td>32,656,941</td>
</tr>
<tr>
<td>Waste-to-Energy ($0.01)</td>
<td>8,362,449</td>
<td>8,902,747</td>
<td>9,044,459</td>
<td>5,454,182</td>
</tr>
<tr>
<td>Pyrolysis ($0.01)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cement Kiln ($0.01)</td>
<td>2,297,386</td>
<td>1,488,314</td>
<td>1,572,613</td>
<td>1,839,285</td>
</tr>
<tr>
<td>CAAF ($0.01)</td>
<td>1,162,065</td>
<td>1,397,981</td>
<td>1,530,845</td>
<td>1,366,246</td>
</tr>
<tr>
<td>Total</td>
<td>55,185,052</td>
<td>55,252,074</td>
<td>56,137,723</td>
<td>41,679,051</td>
</tr>
</tbody>
</table>

Table 2 breaks down the output by fiber type. CARE feels that this represents the demand for various fiber types in the marketplace. While Table 1 shows that the amount of output decreased throughout 2015, the marketplace demand in regards to fiber type preference remained consistent. Nylon 6 represented the largest amount of sorted output in 2016. The demand for Nylon 6 remained constant for 2016, but many CSEs fear that the demand will decrease into 2017. Nylon 6,6 continues to be in high demand throughout the country, but the material makes up only 25% of the waste stream. There are still limited outlets for PET material. Most of the PET material included in these charts is being sent to an energy recovery facility. CARE continues its work to find market outlets for this material.
### Table 2: Face Fiber Breakdown – Shipped and Sold

<table>
<thead>
<tr>
<th>Face Fiber Breakdown - Shipped and Sold by Collector/Sorters</th>
<th>Q1 2016</th>
<th>Q2 2016</th>
<th>Q3 2016</th>
<th>Q4 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon 6</td>
<td>42%</td>
<td>47%</td>
<td>47%</td>
<td>46%</td>
</tr>
<tr>
<td>Nylon 6,6</td>
<td>24%</td>
<td>24%</td>
<td>24%</td>
<td>25%</td>
</tr>
<tr>
<td>Modular Carpet Tile</td>
<td>1%</td>
<td>1%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>10%</td>
<td>8%</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>PET</td>
<td>22%</td>
<td>19%</td>
<td>22%</td>
<td>20%</td>
</tr>
</tbody>
</table>

### Figure 3: 2015 & 2016 CSE Output

![Lbs. Shipped and Sold in VPS Program](image)

Figure 4 represents the inventory levels. 2015 data has been included to represent the fluctuations. CARE feels that ending inventory is an important metric in analyzing the CSE network. Inconsistent demand has caused inventory levels to fluctuate. As shown in Figure 4, ending inventory increased in 2015, then decreased greatly from Q4 2015 to Q1 2016. The levels continued to grow for the next three quarters. This doesn’t necessarily mean that new market outlets were developed during that time. In fact, demand for material continued to deteriorate at that time. CSEs, knowing there is little demand for fiber types outside of Nylon 6,6, simply collected less material or were more selective about the material that was being brought into the sorting facilities.
CARE 2016 Annual Survey Results

Each year, as required by the CARE Bylaws, CARE prepares an Annual Survey to report on carpet diversion and recycling results achieved by the respondents to the Annual Survey. All information from respondents is confidential. The collected information is aggregated and analyzed for the Annual Report.

2016 Carpet Recycling Industry Landscape

2016 was a very challenging year for CARE, while at the same time, the organization’s fiscal responsibility continued to grow. CARE’s responsibility in 2015 was $15 million; however, due to the renewal of the Voluntary Product Stewardship Program and an increase in the assessment fee for AB 2398, CARE’s 2016 responsibility was $25 million. CARE will be responsible for $30 million in 2017.

The amount of polyester fiber has continued to grow in the waste stream. Limited market outlets have hindered growth for the demand of post-consumer carpet material. Nylon 6 fiber demand also decreased, leaving Nylon 6,6 as the only consistently viable market for 2016. This is the result of several developments: lower oil prices, a sudden drop in N6 processing capacity in the recycling industry, and other macroeconomic issues. In addition, China began dumping caprolactam on the global market, further depressing the value of this virgin monomer, the key building block of virgin N6. This has caused some collectors and processors to cease operations in 2016, and many are still struggling to survive.

Annual Survey Methodology

To form a complete picture of the national Carpet Recycling Industry, respondents were asked questions regarding the following issues on the Annual Survey:

- Recycled output pounds
- Recycling versus other end-uses for the material diverted (i.e. reuse, end-product manufacturing, carpet as alternative fuel (CAAF), cement kiln, waste-to-energy, and landfill)
- Types and amounts of carpets recycled, by fiber type
- End products manufactured from recycled materials
- Steps in the recycling process performed by the respondent
- Geographical locations and employment information
- International versus domestic customers (outlets)
- Employment data

In addition to the quantitative information sought, CARE also requested input on the organizations' performance and the value of CARE to respondents. This information is used to improve CARE's operations and resources.

CARE continues to refine its reporting and data analysis. For the 2016 survey, CARE used the same method instituted in 2015. CARE developed two surveys targeted at different parts of the supply chain. CARE had collected data throughout the year in its management of the Voluntary Product Stewardship and AB 2398 programs. The surveys were designed to account for missing information in the mass balance analysis.

The first survey was sent to Collectors and Sorters. Almost all the CSEs in the United States participate in the Voluntary Product Stewardship and report their numbers on a quarterly basis, so CARE already had most of the information required. The survey was sent to 55 CSEs; 20 completed the survey for a response rate of 36%.

The second survey was directed to companies that process the carpet and/or use post-consumer carpet material in a product. This survey was sent to 12 processors and manufacturers across the US. All recipients of the survey responded.

A copy of both 2016 surveys are attached at the end of the Annual Report in Appendix 1.

CARE assessed the responses received and followed up as needed with individual companies to maximize participation and to ensure that it minimized double-counting wherever possible. By doing so, the reported data is more accurate and reflects a truer picture of the amount of carpet diverted and recycled in 2016. CARE wishes to acknowledge the support of Dr. Matthew Realff of the Georgia Institute of Technology for his assistance in evaluating the data.

CARE makes no warranty as to the accuracy of this data and assumes no responsibility or liability for how this information is used by individuals or companies and makes no warranties for its use.

**Evaluation of Progress in 2016**

**Carpet Discard Methodology**

In 2011, the CARE Board of Directors adopted a formula for calculating carpet discards, which more accurately reflects actual sales and carpet discards in the United States. CARE believes the formula provides a more accurate picture of both gross collections and recycling rates for annual reports. In the fall of 2012, CalRecycle agreed to the use of this formula for calculations involving post-consumer recycling in California.
The purpose of the methodology is to update the discards on an annual basis, using actual sales data, and upgraded by factors that influence the calculation. Those factors include changes in imports/exports, percent of the market that is replacement, average face weight, deselection, and demolition rate. CARE methodology uses a mass balance approach. Since operators know with great accuracy the pounds of material shipped out of a facility (the shipper is either being paid by the pound by a customer or is paying by the pound for landfilling to energy conversion), CARE simply collects all output data and back calculates what must have come in to support the reported outputs.

**Formula for Calculating Carpet Discards**

The approved formula for calculation of discards is:

\[
\text{Discards} = (((\text{Sales} \times R)\times P) + D + DS)
\]

The factors used to calculate the amount of carpet available for diversion include:

- **S** = Carpet Sales in the US for the reporting period (square yards)

  Sales Data comes from Market Insights, an independent market research firm, who is collecting the confidential sales data from carpet manufacturers doing business in the US.

- **R** = Percent of carpet that is replacement, or carpet replacing existing carpet.

  Replacement carpet is the carpet destined for the landfill. The carpet industry has worked with Market Insights to quantify the replacement rate to be 78% currently.

- **P** = Average weight of carpet per square yard.

  In 2012, the average weight was 4.2 pounds/square yard and this number was reconfirmed in 2013. A new carpet weight analysis was conducted in 2016. (Raw data was supplied by the industry and analyzed by CARE. Weighted averages of carpet weights of broadloom and tile used in the commercial and residential sectors were calculated.) The average weight of 4.4 will be used in 2016.

- **D** = Pounds of carpet from demolition projects not replaced.

  In 2016, the weighted demolition rate (85% residential and 15% commercial) was estimated at 0.57%, (estimate provided by Market Insights). D is converted to pounds by multiplying Sales x R x P.

- **DS** = Deselection pounds resulting from a decision to rip out old carpet and not replace it with new carpet. The overall deselection estimate is ca. 0.75% per year.

Note that the term demolition represents the teardown of a building. There is no easy way to know the actual square yards of carpet coming out of such a process. By assuming the actual demolition rate obtained from Marketing Insights we are likely overestimating the total volume of carpet sent to landfill. However, this is a tiny fraction (<1%) of the overall amount and does not significantly alter the flow.
Deselection is a separate element of the PCC flow to landfill. CARE has always assumed this parameter to be very small (<1%). CARE worked to develop a more quantitative estimate of deselection in 2016. Based on an analysis of historical data back to 1975, in 5 year increments, it is estimated that deselection represents <0.75% per year. Based on 2016 total estimated discards of 3.48 billion pounds, deselection equates to an estimated 26 million pounds.

It should be noted that both demolition and deselection estimates are well within the error associated with our discard and recycle estimates.

Application of the formula to generate discards is shown in the following example using actual U.S. data from 2016 and rounded for clarity.

Discards = (((Sales * R)* P) + D + DS)

Sales 2015: 1 Billion square yards
Discards = (1,003*0.78) *4.4) = 3,442 million pounds + D +DS

Where D = 3,442*0.0057 = 20 million pounds
Where DS = 3,442*0.0075 = 26 million pounds
Thus, Discards =3,442 + 20 + 26 = 3,488 million pounds

Post-Consumer Carpet Collection and Recycling: Quantitative Results for 2016

CARE continues to work to quantify metrics necessary to understand the marketplace for carpet recycling in the United States. It is important to recognize that CARE discloses and works with the data as received. These numbers have been voluntarily given to CARE by the independent post-consumer carpet sorters and processors that are members of CARE. CARE has not audited the numbers nor does CARE guarantee the accuracy of the numbers submitted. However, it should be noted that all VPS and CA program participants are subject to an independent Agreed Upon Procedure protocol that works to verify and validate data submitted. Key results include:

- 488 million pounds of gross collected post-consumer carpet in 2016 = Diversion Rate of 14%
- 167 million pounds of post-consumer carpet was recycled in 2016, a recycling rate of 5%
- Recycled output yield was 34% (Output/gross collection)
- 4.6 billion Pounds of cumulative diversion since 2002
- 174 million pounds were sent back to landfill in 2016
- Inventory dropped by 8 million pounds

Table 3 shows a comparison by pounds and percentage of the quantity of post-consumer carpet recycled and diverted from landfill since program inception in 2002 through 2016. CARE began using the new methodology for measuring carpet discards and a mass balance calculation of input based on measured pounds of outputs in 2013. CARE continues to refine this method each year.
### Table 3: Post-Consumer Carpet Recycling and Diversion Statistics, 2002-2016

**Millions of pounds**

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Total Discards*</td>
<td>4,409</td>
<td>4,396</td>
<td>4,588</td>
<td>4,916</td>
<td>4,687</td>
<td>4,560</td>
<td>4,228</td>
<td>3,718</td>
<td>3,373</td>
<td>3,816</td>
<td>3,540</td>
<td>3,703</td>
<td>3,426</td>
<td>3,427</td>
<td>3,488</td>
</tr>
<tr>
<td>Diversion</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Reuse</td>
<td>9</td>
<td>0</td>
<td>0.3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>12</td>
<td>2</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Recycled Output**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Int'l Recycle Yield (23%)</td>
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<td></td>
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<tr>
<td>Total Recycled</td>
<td>46</td>
<td>87</td>
<td>98</td>
<td>194</td>
<td>239</td>
<td>275</td>
<td>243</td>
<td>246</td>
<td>271</td>
<td>250</td>
<td>294</td>
<td>185</td>
<td>114</td>
<td>170</td>
<td>167</td>
</tr>
<tr>
<td>Total Reuse + Recycle</td>
<td>55</td>
<td>87</td>
<td>98.3</td>
<td>194</td>
<td>239</td>
<td>275</td>
<td>247</td>
<td>258</td>
<td>273</td>
<td>251</td>
<td>299</td>
<td>197</td>
<td>126</td>
<td>170</td>
<td>167</td>
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<tr>
<td>Waste-to-Energy</td>
<td>1.9</td>
<td>7</td>
<td>9</td>
<td>27</td>
<td>21</td>
<td>19</td>
<td>41</td>
<td>47</td>
<td>38</td>
<td>46</td>
<td>42</td>
<td>58</td>
<td>41</td>
<td>68</td>
<td>55</td>
</tr>
<tr>
<td>CAAF or Cement Kiln</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>12</td>
<td>26</td>
<td>36</td>
<td>11</td>
<td>23</td>
<td>113</td>
<td>120</td>
<td>89</td>
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<tr>
<td>Int'l Ship (Gross-Yield)</td>
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<tr>
<td>Other Internal Use</td>
<td>74</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Sent back to Landfill</td>
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<tr>
<td>TOTAL Diverted</td>
<td>57</td>
<td>94</td>
<td>108</td>
<td>224</td>
<td>260</td>
<td>296</td>
<td>290</td>
<td>317</td>
<td>333</td>
<td>333</td>
<td>352</td>
<td>334</td>
<td>494</td>
<td>520</td>
<td>488</td>
</tr>
<tr>
<td>Net Diversion</td>
<td>270</td>
<td>329</td>
<td>314</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Recycling Rate</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>4%</td>
<td>5%</td>
<td>6%</td>
<td>6%</td>
<td>7%</td>
<td>8%</td>
<td>7%</td>
<td>8%</td>
<td>5%</td>
<td>4%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Gross Diversion Rate</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>5%</td>
<td>6%</td>
<td>6%</td>
<td>7%</td>
<td>9%</td>
<td>10%</td>
<td>9%</td>
<td>10%</td>
<td>14%</td>
<td>14%</td>
<td>15%</td>
<td>14%</td>
</tr>
</tbody>
</table>

The mass balance of outputs method, Figure 5 assumes the sorters and processors accurately know their weight of goods sold and shipped to customers, landfill, WtE or kilns since there are profits or costs associated with these shipments. Reported pounds received on the front end are considered gross estimates since most loads are NOT weighed. Therefore, by adding everything that goes out, one can, with better accuracy, measure what came in. CARE has closed the gap between directly reported gross collections and using the mass balance approach to within approximately 10%.
Figure 5: Mass Balance Approach to Estimating Gross Collection in 2016

Figure 6 represents the historical trend of gross pounds of post-consumer carpet collected each year since 2002. Using the mass balance approach, gross collection for 2016 is calculated to be 488 million pounds. This is a decrease of 32 million lbs. from 2015, and it is mainly due to the adverse macroeconomic issues that persist in the marketplace and an increase in the selectivity of fiber entering sorting facilities.

Please note that CARE began using the mass balance methodology in 2013. This explains the large jump from 2012 to 2013. CARE continues to make improvements to its reporting annually. Cumulative diversion from landfill since CARE’s inception totals 4.6 billion pounds.

Figure 6: Historical Post-Consumer Carpet Diversion, 2002-2016
Figure 7 represents the next step in the supply chain. After the post-consumer carpet is brought to a sorting facility, it is then sent to a processor. Of the pounds collected and sorted in 2016, 36% was sent back to the landfill. This number is 5% higher than 2015. This is mostly due to the shortage of end markets for the material. This number could have been higher, but many CSEs are continuing to be more selective while market issues persist.

The amount of material sent to recycling processes increased from 30% in 2015 to 33% in 2016. CARE believes that the changes are due to the material selectivity mentioned earlier, ultimately resulting from the market challenges (oil markets, raw material prices, etc.). CAAF & Kiln and Waste-To-Energy output dropped by 3 and 2 percentage points respectively. The amount of material reused decreased by 2 percentage points from 2015.

For historical data, the reader is encouraged to visit https://carpetrecovery.org/newsblog/reading-room/.

**Figure 7: Outlets for Post-Consumer Carpet Collected – 2016**

End Products Manufactured from Post-Consumer Carpet

Respondents reported that 72% of recycled post-consumer carpet is manufactured into engineered resins. This category has continued to grow for the last few years. The percentage in 2014 of material manufactured into engineered resins was 46%, then increased sharply in 2015 to 65%, and the amount has now grown to 72% in 2016.

2016 brought another large drop in the amount of material recycled into carpet fiber. The percentage for this dropped 10 percentage points (13% to 3%) from 2015 to 2016. This is due to a large processor ceasing fiber recycling operations in late 2015. The amount of material being recycled into carpet
backing remained constant at 8%. A total of 11% of post-consumer carpet pounds that were recycled went into new carpet and considered a true cradle-to-cradle process.

**Figure 8: 2016 End-Product Markets for Post-Consumer Carpet**

International Markets for Post-Consumer Carpet Material

In 2016, the US consumed 98% of the post-consumer carpet material collected. This remained unchanged from 2015. 11 million pounds were shipped internationally in 2016. Of the material shipped, it is estimated that 4 million pounds was recycled and that 7 million pounds went back to the landfill. This estimation is based on the recycled output rate of 34% for the United States.

**Nylon 6 and Nylon 6, 6 Fibers Were 72% of the Fiber Type Sorted in 2015**

It’s become apparent in the past few years that many large collectors have refined their collection models to reduce or eliminate the amount of PET that enters their facilities. This means that the percentages in Figure 7 does not accurately represent the waste stream, only what was brought into sorting facilities.

In 2016, Nylon 6 and Nylon 6,6 fibers accounted for 72% of the total sorted carpet fiber. The amount of nylon 6 grew by 15% in 2016. Nylon 6,6 dropped by 5%. Macroeconomic changes have had an impact on the price of virgin materials, often making them less expensive to produce than recycled goods. Changes in processing methods also had a direct impact on the demand for certain fiber types. Demand for Nylon 6 began to drop sharply in the second half of 2015, but the trend began to reverse midway through 2016. CARE anticipates the amount of nylon 6,6 to increase in 2017 due to existing market outlets.
PET percentage was 21%, down three percentage points from 2015. As collectors continue to refine their collection models to minimize the amount of PET, it is expected that this number will continue to decline in 2017. Polypropylene represented 7% of what was collected in 2015, down 4% from 2015.

**Figure 9: Post-Consumer Carpet Fiber Type, 2016**

NOTE: N66=Nylon 6,6; N6=Nylon 6; PP=Polypropylene; PET=Polyethylene terephthalate

For historical perspectives, Figure 10 shows the shift in carpet face fiber from 2008-2016. The chart shows the growth of PET fiber in post-consumer carpet collection. While 2015 and 2016 represent a decrease in the amount of PET collected, it should be noted this decrease is a result of collectors finding ways to minimize the amount of PET carpet that is collected. The amount of PET carpet that is sold in the marketplace continues to grow, which means that more PET fiber will find its way into the waste stream in the coming years.
Market fluctuations present big challenges for those in the carpet recycling industry. Many companies are having to refine business models to simply survive in the tumultuous environment. For example, with the increase of PET into the waste stream, the collector now has increased landfill costs because of the lack of viable end markets. Some collectors have stated that their waste costs have doubled and tripled in the past few years.

Selectivity of fiber was mentioned earlier in the report, but it’s starting to become a widespread practice in the CSE community. Typically, you would not see that much of a jump in fiber usage as shown with nylon 6 in Figure 8, but many CSEs seek to only bring profitable fiber into the door. That nylon 6 number can be deceiving as well. Most of this material was consumed in the beginning of the year. A decrease in Nylon 6 and an increase in Nylon 6,6 is expected for 2017.

The decrease in Figure 8 represented for PET doesn’t mean that PET is decreasing in the waste stream. In fact, the amount of PET carpet being sold is increasing. The decrease just means that the material is not making its way into the CSE facilities due to its low value. This is more than likely ending up in the landfill. PET is expected to continue to grow in the coming years. Some estimate that PET will grow to over 50% of the waste stream in the next few years. CARE does not see economically viable markets for PET fiber at this point, but the organization is taken many steps to attempt to find market-based solutions in these challenging times.

**CARE Carpet Recycling Survey Respondents Employed an estimated 1,215 People in Local Communities across the U.S. in 2016**

The respondents to the CARE Annual Survey employed 1,215 people in local communities in 2016, a decrease of 80 people or 6% versus 2015. Some CSEs across the nation had ceased operations in 2016. This explains the decrease in jobs reported for 2016.
Figure 11: Total Employment by CARE Survey Respondents

Number of Employees

![Bar Chart]

Collection of Carpet by Region

Figure 10 show where respondents collected carpet, by region.

Figure 12: Reporting Regions in the U.S.

![Map]

Figure 13 shows that post-consumer carpet collection is highest in the Southeast (35%), followed by the California (29%), the Southwest (19%), Northeast (6%), and Northwest (2%). However, on a single state basis, CA is clearly the largest volume state. This is only possible due to the large subsidy
experiment underway in the State. The subsidy program is complex and expensive. California consumers currently pay a 25 cent/sqyd assessment on every square yard of new carpet purchased to fund a massive subsidy, collection, education and outreach program and administrative costs. The reader is referred to the annual California Report for more details.

Figure 13: Collection of Carpet by Region, 2016

Qualitative Feedback from CARE 2016 Survey Respondents

In the 2016 survey, 90% of respondents (n=25) said CARE was meeting their needs. This is unchanged from 2015. CARE continues to look for ways to increase value and support for its members.
2016 Summary

- CARE used the mass balance approach for the fourth consecutive year. Changes were made to the surveys based on the information needed for the mass balance analysis. Since CARE had already collected data throughout the year, the surveys targeted missing data from the analysis.

- Challenges persist in the marketplace. Many collectors and sorters are struggling in current economic conditions. Collectors are adjusting their business models to remain in operation. This includes increasing the selectivity of material entering facilities.

- Engineered resins continued to increase and represents an all-time high of 72% of recycled output for 2016.

- “Closed loop recycle” decreased from 21% in 2015 to 11% in 2016.

- The data shows PET face fiber collection decreased in 2014, 2015, and 2016. This is believed to be a direct result of selectivity by collector/sorters due to a lack of outlets for this material. This trend is expected to continue and could impact other fiber types if market conditions don’t improve.

- The demand for Nylon 6 began to decrease in the second half of 2015, but this trend reversed in the first half of 2016. CARE expects the demand for Nylon 6 to decrease in 2017, while the demand for Nylon 6,6 will remain constant or increase slightly.

- International activity continued to decrease due to drop in demand in Asia.
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, and even more so in this type of survey, where there is no logical or reliable way to extrapolate results from respondents to the general population. This means that respondents’ survey responses will represent 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 these different types of entities (collectors, sorting facilities, processors and manufacturers) are included in the survey, the chance exists that a 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 their handling of the same material. Design and analysis of the survey data are built to help minimize this concern.

Several 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 again used to allow respondents to provide data completely anonymously, if they desired. In addition, all written and verbal communication with potential survey respondents stressed the confidentiality of data.

Simplicity and ease of response was also a key to participation rates. The survey questions were streamlined to the maximum extent possible so that only the most critical data were included, based upon the philosophy that it is much better to have the basic data from many respondents than detailed information from a few (particularly since there is no basis for extrapolation).

Participation rates can also be boosted through the application of multiple means of contact, as well as repeated contact. Thus, extensive e-mail and telephone communications were used to contact survey respondents. Every effort was made to include new participants, as they became known to CARE.

To reduce the chances of double counting, survey respondents were asked to identify the geographic sources of their material to the extent they were known. If there is information from two or more companies that 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 received the material their company shipped out. 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 post-consumer carpet through the collection and recycling process. In some cases, receiving companies are contacted to verify numbers.

With those basic principles in mind, the surveying process was implemented, using the steps outlined below, which are described in general chronological order:
1. The survey used in the 2016 was updated based on respondents’ feedback from last year. The 2016 survey form is shown in Appendix 1.

2. The survey was web-based and results were password protected and available solely to two CARE staff to preserve confidentiality.

3. Based upon past experiences with this survey process, the survey was focused on those companies for which specific individuals have been identified as points of contact.

4. Companies with specific contacts and e-mail addresses were notified via e-mail and were provided the survey URL so that they could respond electronically. A total of about 65 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 were asked to provide.

5. Approximately two weeks after the initial e-mail was sent, follow-up activities were initiated. These included e-mails to those companies that had not responded, as well as telephone calls to prompt responses and answer questions some potential respondents had raised.

6. All survey responses were reviewed for any inconsistencies or unclear responses. The survey responses were also reviewed to determine if there were any questionable responses (e.g. data that appeared to be off by orders of magnitude with regards to company size). Where there was some question about the responses provided and the respondents had provided their names (respondents can choose to respond anonymously), follow-up was attempted to clarify the responses. In most cases these efforts were successful. In a few cases site visits were conducted for clarity.

7. Data were transferred to a spreadsheet-based database. This database contains all the quantitative responses, as well as summaries of any descriptive information provided by the companies.

8. Data to eliminate potential double counting was received and appropriate adjustments made to the data compilations where/when necessary.

9. The data were compiled and analyzed to produce the results described herein. CARE acknowledges Dr. Matthew Realff for his assistance in the logistics analysis and mass balance calculations.

10. Efforts to maintain consistency year to year are considered important to plot trends and look for patterns.

**Assessment of Survey Approach and Results**

As noted previously, there are three key factors that led to the conclusion that this year’s survey results are high in quality (i.e. believed to be more representative of real-world conditions):

1. Response rate was again very high, meaning that a greater proportion of the total number of companies involved in post-consumer carpet recycling responded by submitting survey results.

2. CARE had already possessed a large part of the data through the management of the Voluntary Product Stewardship and AB 2398 Programs.
3. Manufacturers who use the material within their own manufacturing process, handled a significant portion of the post-consumer carpet. This eliminated the possibility for double counting of this material.

For these reasons, double counting does not appear to be a significant issue with the data presented in the 2016 CARE Annual Report.

CARE Outreach Results, 2016

14th Annual CARE Conference

In 2016, members and colleagues of CARE gathered at its 14th Annual Conference, in downtown Greenville, SC in early May. The conference format included a one-and-a-half-day event followed by a half day for entrepreneurs only. The venue provided great opportunities for business interactions, including with vendors/exhibitors. CARE also recognized the outstanding individuals and companies who made significant contributions to the CARE organization during the year. The following awards were given:

2015 Recycler of the Year – Aquafil

Aquafil’s reclamation of post-consumer carpet is a first step in the ECONYL® Regeneration System, which creates recycled nylon 6 fibers from post-consumer carpet in a continuous production cycle. Aquafil’s process transforms the nylon 6 back into raw material without any loss of quality.
2015 CARE Person of the Year - Rocky Ponders and Robert Goldberg

Rocky Ponders and Robert Goldberg, Columbia Recycling Corporation, were named 2015 CARE Persons of the Year. These two outstanding individuals transformed their company’s business model, expanding post-industrial and post-consumer carpet recycling over the past 36 years. Thus, they increased employment from fewer than 25 employees to over 500 people. Rocky and Robert led the company’s growth into production of melt filtered pellets for the compounding industry, and the production of carpet cushion manufacturing, using recycled carpet components.

“CARE is pleased to recognize Rocky and Robert’s leadership of Columbia Recycling Corporation. Over the years, these two innovators have led their company to divert significant amounts of carpet from landfills across the USA, through innovations in process technology, equipment design and product development”, says Robert Peoples, Executive Director of CARE. “We especially want to recognize Rocky, as he retires from the day-to-day operations of Columbia Recycling, and wish him all the best in his new efforts to further develop the carpet cushion business.”
CARE Website Traffic

CARE’s website, www.carpetrecovery.org, underwent a major overhaul in 2014. The newly designed website was introduced at the spring annual meeting in May of 2014. The following charts provide a general overview of website activities.

Figure 15: CARE Website Visits
Figure 16: CARE Map Webpage Visits, 2016

![CARE Map Visits 2016](image)

Figure 17: CARE AB 2398 Webpage Visits, 2016

![AB 2398 Page Views](image)
Figure 18: New vs. Returning Webpage Visitors, 2016

NEW VS. RETURNING USERS

- **73%** New Visitor
- **27%** Returning Visitor
Appendix 1

Carpet America Recover Effort (CARE) Survey 2016

2016 CARE Annual Survey

1.

Dear CARE Carpet Reclamation and Recycling Partner,

Thank you for taking the time to complete the 2016 Carpet America Recovery Effort (CARE) Annual Survey. Your complete answers to this survey will allow us to perform quantitative analysis on the carpet recycling stream and create a detailed Annual Report for the stakeholders of CARE.

Please report only the quantity of post-consumer carpet managed through your business. For purposes of the CARE Annual Report, we will NOT include information on post-industrial carpet, ONLY POST-CONSUMER CARPET.

The survey should take less than 20 minutes to complete. To minimize the amount of time spent on completing the survey, we recommend that you read through the survey and have your data available before completing the survey.

If you need any assistance or have questions while completing this survey, please contact Anthony Cline, CARE’s Operations Director, at acline@carpetrecovery.org or 706-428-2127.

Due to the time sensitive nature of this survey, please complete the survey by close of business on Wednesday, February 1, 2017.

Note - All Company information and answers to this survey will be CONFIDENTIAL, and will only be seen and used by CARE’s Executive Director and Operations Director.

All data collected will be reported in the aggregate, thus removing any references to individual companies.

Thank you

Bob Peoples

Executive Director, Carpet America Recovery Effort (CARE)

* Of your total employees, how many are specifically associated with the diversion/recycling of post-consumer carpet?

[ ]

* 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 consolidates and temporarily stores recovered commercial and/or residential carpet.

☐ Sorting Facility - A facility that segregates collected carpet into the various backing types (PVC, SBR Latex, etc.) and/or fiber types (e.g., Nylon 6, Nylon 6.6, Polypropylene and Polyester).

☐ Processor - A company or facility that receives post-consumer 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.
Included is a flow chart that represents the various stages of the carpet recycling process. This will be used throughout the survey.

**Definitions**

**Carpet as Alternative Fuel (CAAF)**: Fuel that has been produced from source-separated carpet and processed, including (1) extraction of components that are possible; (2) size reduction, shredding, and/or blending with coal fines, etc.

**Cement Kiln**: Cement production facility that may use CAAF as a source of energy and/or as an additive for cement production.

**Landfilling**: Landfilling is the placement of post-consumer carpet and/or the residuals from a post-consumer carpet management system into a landfill disposal facility.

**Reuse**: Refurbishing and donating/selling recovered carpet back into the market for its original intended use. The reuse of recovered carpet retains the original purpose and performance characteristics of the carpet.

**Waste-to-Energy**: Process of recovering thermal energy from MSW through combustion.

**Example**: A recycling business person collects 1 million lbs of carpet. The recycler sorts and shear the material and sends it to a processor. Along the way, some of the post-consumer carpet is reused, and some is not able to be recycled, for various reasons, and is either sent to a CAAF or a cement kiln facility, waste-to-energy, or the landfill. The recycler tracks the amount of material as it progresses through the process. For this example, the recycler would answer the next questions as follows:
Please use the Processor Flow Chart to answer this question.
*Do not use commas

Example:

a. - Lbs. received from sorter
b. - Lbs of starting inventory material
  a. Pounds received from sorter
  b. Pounds of Starting Inventory
  c. Pounds to Landfill
  d. Pounds to International
  e. Pounds of Ending Inventory
  f. Pounds Reused
  g. Pounds to CAAF
  h. Pounds of Processed Fiber
  i. Pounds of Filler
  j. Pounds to Cement Kiln
  k. Pounds to WTE

How are you handling the PET carpet you receive (outlets or landfill)?
Please use the Manufacturer Flow Chart for this question.

* Do not use commas

Example:

a. - Lbs. received from processor
b. - Lbs. of starting inventory material

a. Pounds Received from Processor
b. Pounds of Starting Inventory
c. Pounds to Landfill
d. Pounds to International
e. Pounds of Ending Inventory
f. Pounds Reused
g. Pounds to CAAF
h. Pounds Sent to Other Manufacturer
i. Pounds Used by Your Product
j. Pounds to Cement Kilns
k. Pounds to WTE
Manufactured Products Output

a. ___________ Lbs. your products

b. ___________ Lbs. Engineered Resin

c. ___________ Lbs. Molded/Extruded

d. ___________ Lbs. Carpet Fiber

e. ___________ Lbs. Carpet Backing

f. ___________ Lbs. Carpet Cushion

g. ___________ Lbs. of ________

h. ___________ Lbs. Filler
This question is inquiring about the products that are manufactured using post-consumer carpet. The first blank, “a”, asks for the total lbs. of material that are included in manufactured products. The entries on the right-hand side are requesting the specific numbers on the type of product was manufactured with the material.

*Do not use commas.

a. Pounds of Material Used
   - Overall
   - Resin
   - Molded/Extruded
   - Pounds for Carpet Fiber
   - Pounds for Carpet Binding
   - Pounds for Carpet Cushion
   - Miscellaneous
   - Pounds for Filler

US Regional Map

Northwest (inc AK HI) ___%  Midwest ___%
California ___%  Northeast ___%
Southwest ___%  Southeast ___%
To the extent known, identify what percent of the material received came from each geographic area:

Note - Totals must equal 100%

a. California
b. Northwest
c. Midwest
d. Northeast
e. Southeast
f. Southwest

Overall, is CARE meeting your and your business's needs?

☐ Yes
☐ No

If you answered no to the previous question, please specify where CARE can provide more support for your business.

I affirm that the answers provided in this survey are accurate and complete to the best of my knowledge.

Print Name:
Dear CARE Carpet Reclamation and Recycling Partner,

Thank you for taking the time to complete the 2016 Carpet America Recovery Effort (CARE) Annual Survey. Your complete answers to this survey will allow us to perform quantitative analysis on the carpet recycling stream and create a detailed Annual Report for the stakeholders of CARE.

Please report only the quantity of post-consumer carpet managed through your business. For purposes of the CARE Annual Report, we will NOT include information on post-industrial carpet, ONLY POST-CONSUMER CARPET.

The survey should take less than 20 minutes to complete. To minimize the amount of time spent on completing the survey, we recommend that you read through the survey and have your data available before completing the survey.

If you need any assistance or have questions while completing this survey, please contact Anthony Cline, CARE’s Operations Director, at acline@carpetrecovery.org or 706-428-2127.

Due to the time sensitive nature of this survey, please complete the survey by close of business on Wednesday, February 1, 2017.

Note - All Company information and answers to this survey will be CONFIDENTIAL, and will only be seen and used by CARE’s Executive Director and Operations Director.

All data collected will be reported in the aggregate, thus removing any references to individual companies.

Thank you

Bob Peoples

Executive Director, Carpet America Recovery Effort (CARE)

* 1. For every square yard of Nylon carpet you see, how many square yards of PET carpet do you see?

   

* 2. For every square yard of Nylon 6,6 carpet, how much Nylon 6 carpet do you see?

   
* 3. Please indicate (in percentages) all regions that your sorted output (material for processing or WTE) was shipped to.

Note - Totals must equal 100%

California   
Northwest   
Midwest   
Northeast   
Southeast   
Southwest   
International

* 4. Overall, is CARE meeting your and your business's needs?

☐ Yes
☐ No

* 5. If you answered no to the previous question, please specify where CARE can provide more support for your business.


* 6. I affirm that the answers provided in this survey are accurate and complete to the best of my knowledge.
Appendix 2

Definitions Used in the CARE 2016 Annual Report

**Carpet:** A manufactured article that is used in commercial or residential flooring applications as a decorative or functional feature and that is primarily constructed of a top visible surface of synthetic or natural face fibers or yarns or tufts attached to a backing system derived from synthetic or natural materials. “Carpet” includes, but is not limited to, a commercial or a residential broadloom carpet or carpet tiles. “Carpet” does not include a rug, pad, cushion, or underlayment used in conjunction with, or separately from, a carpet.

**Carpet as Alternative Fuel (CAAF):** Fuel that has been produced from source-separated, and sorted post-consumer carpet and processed, including (1) extraction of component for recycling if at all possible; and (2) size reduction, shredding, and/or blending with coal fines, etc.

**Carpet America Recovery Effort (CARE):** A nationwide, 501(c) (3) non-profit organization whose focus is on post-consumer carpet stewardship.

**Carpet Industry:** The universe of participants involved in the production of carpet, including carpet manufacturers, fiber manufacturers, material suppliers, etc. It includes, and is not limited to members of the Carpet and Rug Institute (CRI).

**Cement Kiln:** Cement production facility that may use CAAF as a source of energy and/or as an additive for cement production.

**Collection:** Any method of consolidating and temporarily storing recovered commercial and/or residential carpet.

**Disposal Diversion:** Carpet removed from the waste stream that was destined for the landfill or incineration, for the purpose of reuse, recycling, CAAF or waste-to-energy (WtE).

**Disposal Facility:** Facilities that are licensed and permitted to provide final disposal for the specific wastes they accept, including waste-to-energy, incineration, and landfilling.

**Entrepreneur:** Individual or privately-held company who is not a carpet manufacturer, and who actively, collects, sorts, processes or manufactures products made from post-consumer carpet.

**Filler:** Materials such as calcium carbonate, etc. used in the production of carpet backing.

**Higher Value Recycling Material:** Output of the materials with the most benefits to manufacturers of finished products. Examples of higher value recycling materials include post-consumer carpet fiber, post-consumer carpet backing, engineered resins and material for carpet cushion.

**Incineration:** Complete burning of material to ashes, with no energy recovery, to reduce waste volume.

**Input:** The post-consumer carpet that is collected, sorted and readied for processing.

**Landfilling:** Landfilling includes the placement of post-consumer carpet and/or the residuals from a post-consumer carpet management method into a landfill disposal facility.
**Lower Value Recycling Material:** Output of the materials with benefit to manufacturers of finished products, but a lower value than higher value recycling materials. Examples of lower value recycling materials include carpet filler and non-functional filler.

**Memorandum of Understanding (MOU) for Carpet Stewardship:** An agreement entered into by multi-stakeholders, including carpet industry, entrepreneurs, government entities and non-governmental organizations.

**Output:** The material that results from the processing (shredding, shearing, hammer milling) of post-consumer carpet from the processor. Examples of output are: fiber, shredded carpet tile, depolymerized chemical components, and carpet filler.

**Recycled Content:** Also known as recovered material content, the percentage of material, by weight, a product is made from that has been recovered from consumers in the municipal solid waste stream (post-consumer content) plus any industrial materials salvaged for reuse (pre-consumer/post-industrial content).

**Post-Consumer Recycled Carpet Content:** The amount or percent of carpet, by weight, that is no longer used for or has served its manufactured purpose, that is incorporated into the manufacturing process of the same or a different product.

**Post-Industrial/Pre-Consumer Recycled Carpet Content:** The amount or percent of carpet material, by weight, generated by manufacturers or product converters, such as trimming, overruns, and products returned to the mills, that are incorporated back into the manufacturing process of the same or a different product.

**Post-Consumer Carpet Materials:** Carpet that has completed its life cycle as a consumer item or is no longer used for its manufactured purpose.

**Post-Industrial/Pre-Consumer Carpet Material:** Carpet materials generated in manufacturing and conversion processes, including, but not limited to manufacturing scrap and trimmings/cuttings.

**Processing:** Preparing carpet material for reuse, recycling, CAAF, WTE, or disposal.

**Recycling:** Transforming or remanufacturing discarded carpet materials into usable or marketable materials, rather than for landfill disposal, incineration, WTE, CAAF, or reuse.

**Reuse:** Refurbishing and donating/selling recovered carpet back into the market for its original intended use. The reuse of recovered carpet retains the original purpose and performance characteristics of the carpet.

**Rug:** A loose laid (not installed or attached at wall base soft floor covering manufactured from natural or synthetic fiber, including carpet cut into room or area dimensions that is not intended to cover the entire floor.

**Sorting:** The method used for segregating collected carpet into the various backing types (PVC, SBR Latex, etc.) and/or fiber types (e.g., Nylon 6, Nylon 6.6, Polypropylene and Polyester)
**Source Reduction:** The result of using less product or material in manufacturing and use of carpet, and/or reducing the amount of discarded carpet generated.

**Source Separation:** The process by which carpet is separated/segregated from all other materials at the end of its useful life (or when discarded).

**Waste-to-Energy:** Process of recovering thermal energy from solid waste through combustion.
Appendix 3

CARE Board of Directors, 2016
Brendan McSheehy, Jr. – Board Chair, Universal Fiber Systems LLC
Russell Bennett – Tandus Centiva
Russ Delozier – Secretary, Engineered Floors
Paul Devereux – Natural Transitions
Don Dolan – Masland Contract
Joe Foye – Mohawk Industries
Ron Greitzer – LA Fiber
Philip Ivey – Milliken
Dick Kruse – Kruse Carpet Recycling
Anna Lange – South Carolina Department of Commerce
Jim Lindsey – Aquafil, Inc.
Paul Murray – Treasurer, Shaw Industries Group, Inc.
Eric Nelson – Interface
Bob Peoples – Executive Director, CARE
Sean Ragiel – CarpetCycle
Louis Renbaum – Wellman
Fred Williamson – StarNet Worldwide Commercial Flooring Partnership
Joe Yarbrough – Vice Chair, The Carpet and Rug Institute
Marjaneh Zarrehparvar – PaintCare

CARE Board Advisors
Frank Endrenyi, Sustainable Solutions
Dennis Hayford, Consultant
Glenn Odom, Consultant
Dr. Matthew Realff, Georgia Institute of Technology

About CARE
Established in 2002, CARE is a 501 (C) 3 non-profit organization. Carpet America Recovery Effort (CARE) is a joint industry-government effort to increase the amount of recycling and reuse of post-consumer carpet and reduce the amount of waste carpet going to landfills. www.carpetrecovery.org