



July 27, 2016

Department of Resources and Recovery
1001 I Street
Sacramento CA 95812
Attention: Fareed Faridoon & Jim Hill

Submitted via email: carpet@calrecycle.ca.gov

RE: XT GREEN COMMENTS ON THE CARE 2015 ANNUAL REPORT

To the CalRecycle carpet team and Carpet America Recovery Effort (CARE):

XT Green would first like to thank the CalRecycle carpet team, CARE and the United States carpet industry that CARE represents. Through your efforts and support, there has been significant improvement over the past year in the direction that the California Carpet Stewardship Program is moving in California. This includes the formation of the California Council on Carpet Recycling (Council) representing California stakeholders of which I am proud to be a member. However, ... there is still much work to do.

Importance of Carpet Recycling and the California Carpet Stewardship Program

I'd also like to begin with reminder of why so many of us in California and around the rest of the United States are passionate about carpet recycling and why the successful implementation of the California Carpet Stewardship Program, initiated by AB 2398 is so important:

- 1) It's an opportunity to keep difficult-to-manage, non-degradable materials out of landfills. In California that's almost 350 million pounds discarded annually (of which only 10% was transformed into recycled output in 2015). In the rest of the U. S., 2.5 billion pounds of carpet is discarded (of which only 5.5% was reused or recycled in 2015.)
- 2) It's an opportunity to save valuable resources that are lost when carpet is landfilled (or sent to waste-to-energy facilities). For example, a significant use of recovered nylon from carpet recycling is used to make engine parts in automobiles. Not only does it replace virgin nylon, it also reduces the weight of autos and improves gas mileage.
- 3) It's an opportunity to reduce the dependence on fossil fuels by replacing virgin materials (produced by refining oil) with materials recovered through carpet recycling.
- 4) It's an opportunity for major greenhouse gas emission reductions and the reason why the recycling of fiber (including carpet) is one of the strategies that California is employing to reduce greenhouse gas (GHG) emissions that cause climate change.

- 5) It's an opportunity to create green jobs in California that are associated with the collection and processing of post-consumer carpet (PCC) and providing raw material for manufacturing.

CalRecycle, CARE, the carpet industry and the State of California also have the opportunity to create a template for a successful carpet stewardship program (paid for by consumers) that can be used throughout the U.S. and beyond.

Inspired by the above, the following comments are based on XT Green's concerns regarding the current Program as exemplified by the very disappointing results in the CARE 2015 Annual Report and the need for an aggressive 2017 California Carpet Stewardship Plan to resolve these issues. These concerns include to what degree that the good work of the California Council on Carpet Recycling will be incorporated into the Carpet Stewardship Program moving forward.

More Positive Comments before the Concerns

The recent positive changes in the California Carpet Stewardship Program includes increased incentives that support carpet recycling. The result of this support includes new post-consumer carpet recycling/processing facilities planned to come on-line in California in 2017 including...

XT Green's *EarthCare Carpet Recycling* facility which is planned to open in early 2017 in Riverside County in Southern California. We thank CARE for the Cycle IA Infrastructure Grant (created by Addendum 2 of the Plan) that will help fund the construction of this facility.



XT-Green has spent 3+ years developing, testing (and providing most of the funding) for an advanced, next generation carpet recycling/processing technology. Since the inception of this effort, the goals for the new technology and the first facility in California have included:

- Processing a wide range of carpet types and fibers (but initially starting with nylon residential and nylon commercial broadloom post-consumer carpet)
- Producing the highest quality reclaimed material
- Achieving record high recycling rates and generating minimal production waste by...
- Eliminating respirable dust exposure to employees and fugitive particulate emissions to the environment and...
- Developing markets for recovered nylon, polypropylene and calcium carbonate by...
- Utilizing recycled output as reclaimed material for products manufactured in California.

The California Carpet Stewardship Program was created by AB 2397 due to the understanding that subsidies and incentives were required in order to ensure the economic viability of post-consumer carpet recycling. This includes the long-term sustainability of the XT Green facility.

Comments regarding CARE 2015 Annual Report

XT Green’s comments will focus on the following concerns regarding the 2015 Annual Report non-compliance with AB 2398 statute and regulations and the current California Carpet Stewardship Plan and Addendums. These include:

- A. Not showing “continuous meaningful improvement” regarding recycled output
- B. Not having reasonable access to recycling services throughout California
- C. Not accepting and managing all applicable post-consumer carpet (PCC), regardless of polymer type or primary materials, and
- D. The need to optimize the use of the California Council on Carpet Recycling to provide constructive solution-oriented input on program design and implementation, including input on the 2017 California Carpet Stewardship Plan elements.

A. Show continuous meaningful improvement regarding recycled output

Note: See B below regarding collection issues.

It is very clear from the results in the 2015 Annual Report (and the 2016 Q1 results) that the California Carpet Stewardship Program continues to not meet the AB 2398 statute requirements of “continuous meaningful improvement” especially in regard to recycled output.

I commend CARE on their efforts during the past year to resolve this ongoing problem that resulted in a non-compliance determination of the 2014 Annual Report. The approval of the subsidy increases in the Plan Addendums 2 and 3 should show results by the end of 2016 but especially in 2017 (but more changes are needed). Significant contributions to these results will be made with the addition of the XT Green facility for processing/recycling nylon residential and commercial nylon carpet and additional PET processing facilities planned for California.

To clearly understand the current problem regarding the lack of continuous improvement, it’s best to look at the results on a quarterly basis due to the seasonal fluctuations in carpet sales.

Recycled Output	Q1 (millions of pounds)	Q2 (millions of pounds)	Q3 (millions of pounds)	Q4 (millions of pounds)
2012		11.3	11.0	9.4
2013	12.1	10.7	11.1	10.2
2014	11.1	11.7	11.4	9.2
2015	8.7	11.2	6.7	8.4
2016	7.3			

In general, the quarterly results trend downward significantly in 2015. The exception is Q2 due to the international shipment backlog of recycled output from Q1 because of the Port strikes.

There appears to be some improvement in 2015 and Q1 2016 in gross collections. However, an increase in gross collections should only be considered part of “continuous meaningful improvement” if there is a resulting increase in the amount of recycled output generated from the increased collections. Besides indicating a high percentage of waste from processing PCC, this could also indicate that not all the carpet types are being managed in the Program as required by the statute. (See additional comments in C. below).

	Recycled Output (millions of pounds)	Gross Collections (millions of pounds)	Conversion Rate % RO from Gross Collection
2013	44.1	107.2	41.2%
2014	43.4	123.1	35.3%
2015	35.0	102.0	34.4%
2016 (Q1 only)	7.3	25.5	28.7%

Again, the 2015 results are trending downward from the previous years. One of the goals of the 2017 California Carpet Stewardship Plan should be to incentivize technologies/recycling facilities that have significantly higher rates in creating recycled output from the collected PCC.

Note: This problem should improve with the increase in incentives for calcium carbonate that was included in Addendum 3.

California vs. the rest of the U.S.

Finally, although the California Carpet Stewardship Program 2015 recycled output results are disappointing, California is doing much better than the rest of the United States relative to carpet recycling. As shown on the attached Table 1, the California % rate of recycled output from discarded carpet for 2015 was 10% vs. 5.5% for the rest of the United States.

This is actually a significant improvement due the institution of a Voluntary Product Stewardship (VPS) Program by the carpet industry in 2015 (which provides subsidies to Collector/Sorter Entrepreneurs but not to Tier 1 processors or Tier 2 manufacturers.) Without the VPS subsidy in 2014, the total U.S. rate (excluding California) was 2.8% vs. 12% in California. These results show that carpet stewardship subsidies are absolutely necessary for success and that when you add additional subsidies, incentives and grants, the results improve.

Summary and suggestions:

- **The CARE 2015 Annual Report results do not meet the requirement for “continuous meaningful improvement” for recycled output**

- **The conversion rate of recycled output from gross collections should be considered a factor in determining “continuous meaning improvement”**
- **The existing California incentive/subsidy program (including Addendums) are absolutely needed to maintain and improve recycling rates and...**
- **The incentives are also required to ensure that the new carpet recycling/processing facilities that have been attracted to locate in California (because of these subsidies) are built and succeed.**

B. Have reasonable access to recycling services throughout California

There is significant carpet collection by processors in Southern California providing private trailer service but there is a severe lack in access (“reasonable” or otherwise) to carpet collection drop off sites. The following is the list of the public carpet collection sites in California’s five largest counties, all of which are in Southern California. They represent over 55% of the States’ population. The list includes collection sites reported in the CARE 2015 Annual Report plus the recently added CARE Collection Sites in Southern California.

Counties	Pop. (millions)	Size in square miles	CARE Collection Sites	Collector/ Sorters	Tier 1 Processor/ Recycler	Total
Los Angeles	9.952	4,060	1	0	2	3
San Diego	3.176	4,204	0	1	0	1
Orange	3.085	790	1	0	0	1
Riverside	2.265	7208	0	0	0	0
San Bernardino	2.077	20,062	0	0	0	0
Total	20.55 55% of CA		2	1	2	5

Significant amount of additional collections needed soon: Securing more carpet

Besides the statutory and regulatory requirement for Californians to have access to carpet recycling services, additional collection sites in California will be needed to support the new carpet recycling/processing facilities planned for 2017 in Southern California.

These include XT Green’s EarthCare Recycling Facility which needs 36+ million pounds per year, of which 50% is planned to be commercial broadloom carpet (See C. below). Much of this PCC is currently lost to recycling by being dumped with Construction & Demolition waste.

XT Green's EarthCare PCC facility will focus on nylon PCC. Two additional companies have announced their interest in building facilities in California due to the current 35 cents per pound Tier 1 + Tier 2 incentives for non-nylon PCC. These facilities will probably need between 100-200 million pounds of California PET carpet to process annually. That's in addition to the two facilities currently here and the out of state facilities that transport whole carpet from California.

Note: The pressure on California PCC could be reduced if processor & manufacturing incentives were paid in other states (right now only collector/sorters get incentives outside of CA).

Moving forward there needs to be a major strategic shift in order to collect more PCC in California. Currently the majority of collected carpet is "low hanging fruit" utilizing private trailers dropped at the larger retailers and installers and from transfer stations. It will be much more difficult and costly to move up the tree to find and collect the "less available fruit."

Fortunately, there may be opportunities and financial resources besides the California Carpet Stewardship Program that could help support this effort:

❖ **Current Cost of Alternatives to Carpet Recycling**

In 2015, of the 345 million pounds of PCC discarded in California:

- 103 million pounds of PCC was collected, of this...
 - 35 million pounds was turned into recycled output.
 - 22.9 million pounds was processing waste sent to landfill
 - 22.4 million pounds was sent to Waste-to-Energy
- 265 million pounds of uncollected PCC was sent to landfill
- **A total of 310.3 million pounds (155,150 tons) of uncollected PCC and processing waste was sent to waste-to-energy or landfills**

Assuming a conservative average cost of transportation and disposal to landfills or waste to energy facilities of \$60 per ton, the cost to dispose of this material is...

- **\$9.3+ million spent on carpet disposal. Someone is paying for this!**

❖ **Turning disposal payments into increased collections**

The primary competition to PCC collections are solid waste collection and disposal facilities that are more convenient and less expensive than carpet recycling. Part of these reduced costs are due to the fact that landfills often do not assess the true costs associated with land disposal of PCC.

When compared to other solid wastes, additional costs are inherent for PCC land disposal because carpet does not decompose (and therefore does not create new landfill space). Also the non-decomposing carpet creates "lumpy" landfills that make it more difficult to manage.

Because of this, a landfill disposal special handling surcharge should be required on PCC to make the land disposal of carpet more expensive and carpet recycling more attractive.

An additional way to steer PCC away from landfills to carpet recycling could be the focused utilization of the AB 341 legislation requiring commercial businesses to recycle:

- AB 341 applies to businesses generating four cubic yards or more of commercial solid waste per week. (This would apply to almost all carpet retailers and/or installers).
- These businesses are required to either self-haul to recyclers, arrange for the pickup of recyclable materials or use mixed waste processing facility e.g. MRFs but only if...
- The MRF diversion results are “comparable to source separation.” This requirement is not applicable to PCC as the soiling of carpet in a mixed waste facility significantly reduces the ability for this material to be recycled.

Finally, as part of California’s 75% recycling goal, an eventual landfill ban on PCC should be considered. This was not practical in the past due to the lack of recycling technologies and infrastructure for some carpet types and end-user markets for PCC recycled content.

This is rapidly changing due to the recent increases in incentives in the California Carpet Stewardship Program. With the new incentives it is now economically viable to recycle the previously problematic PET carpet. Because of this, companies are planning to move into California to process this material. For nylon, the advanced carpet recycling technology developed by XT Green results in a higher quality, more marketable recycled output. Plus, it allows for the recycling of the previously difficult-to-recycle commercial broadloom carpet.

Summary and suggestions:

- **Reasonable access to public carpet collection drop off sites are not adequate in Southern California**
- **Increased carpet recycling/processing capacity in Southern California from new facilities will need a significant increase in PCC feedstock**
- **Southern California should be a priority in increasing carpet collections**
- **Financial resources currently being used for PCC land disposal and waste-to-energy could be diverted to carpet collections for recycling**
- **PCC landfill costs should be increased to reflect actual costs and promote carpet recycling**
- **AB 341 provisions for mandatory recycling should be applied to carpet**
- **Commercial carpet should be required to be segregated out of Construction & Demolition (C&D) waste bins**
- **Landfill bans for carpet should be considered in California when infrastructure is available to receive all types of PCC**

C. Accept and manage all applicable post-consumer carpet (PCC), regardless of polymer type or primary materials.

Post-consumer carpet (PCC) can be divided into the following major categories:

1. Residential with the following face fiber:
 - a) Nylon 6 and Nylon 6,6

- b) PET (polyester)
- c) Polypropylene
- 2. Carpet Tiles
- 3. Commercial broadloom (usually nylon)

The availability of recycling options for commercial broadloom PCC in California has been very limited due to the unique characteristics of this carpet and the resulting challenges to recycle this material. According to Starnet, (the world's largest network of independent contractors for commercial flooring), the options now available to members located on the West Coast for keeping commercial PCC out of landfills are limited to waste-to-energy.

Note: Some of this material is being added to carpet cushion but the amounts are unknown.

The CARE 2015 Annual Report does not address commercial broadloom as a separate category. This should be done in order to promote the recycling of this material, especially as recycling options will be available for commercial broadloom in California in the first quarter of 2017 and LEED credits are available to help promote the recycling of commercial carpet.

Summary and suggestions:

- **Track the management of commercial broadloom carpet as a separate category**
- **Provide a bonus for recycling commercial broadloom carpet due to the lower yields, longer processing times plus the need to develop new collection strategies and infrastructure to collect this material.**

D. Optimize the utilization of the California Council on Carpet Recycling's input into the 2017 California Carpet Stewardship Plan elements.

The California Council on Carpet Recycling (Council) was authorized by CalRecycle's approval of Addendums 2 and 3 in October and November 2015 respectfully. I was appointed as member of the Council in early 2016, along with 17 other stakeholders from throughout California.

The Council met four times during 2016 for intense, productive all-day meetings and also attended the public workshops. The CARE staff did an excellent job soliciting our ideas and insight for improving the California Carpet Stewardship Program. During the last meeting in June, we provided our individual ideas regarding prioritizing changes to the 2017 CARE Plan.

It is my understanding that the Council will not have an opportunity to review the draft 2017 California Carpet Stewardship Plan until it is released to the public. Therefore, Council members have no idea what if any of the ideas generated by our efforts will be included in the 2017 Plan. It would seem appropriate for the Council members to meet again to review the draft 2017 Plan before it is submitted to CalRecycle and released to the public.

This is especially true as the existence of the Council will surely be identified in the draft 2017 Plan. Therefore, the contents of the draft 2017 Plan could easily be interpreted to have been approved by the Council. With this being the case, the Council should have the right to review it beforehand to see how much of the Council's work is included in the draft 2017 Plan.

The California Council on Carpet Recycling was created to provide additional California input and advice into the development of the 2017 CARE Plan. As listed in Addendum 3, the following are the current decision makers relative to the content and incentive programs of the California Carpet Stewardship Program (that is paid for by the citizens of California):

California Carpet Stewardship Program Sustainable Plan Committee (SPC):

Name	Title	Company
California Member:		
Ronald Greitzer	President	Los Angeles Fiber Company
Non-California Members:		
Russell Bennett	PVC Tile Recycle Manager	Tandus Centiva
Russ Delozier	PCC Collection Manager	J+J Floors
Joe Foye	Division Gen. Counsel	Mohawk Industries
Paul Murray	VP Sustainability	Shaw Industries
Eric Nelson (Chair)	Vice President	Interface
Joseph Yarbrough	President	Carpet and Rug Institute

California Carpet Stewardship Program Sustainable Funding Oversight Committee (SPOC):

Name	Title	Company
California Member:		
Ronald Greitzer	President	Los Angeles Fiber Company
Non-California Members:		
Vance Bell	CEO	Shaw Industries
Jeffrey Loberbaum	CEO	Mohawk Industries
Tom Pendley	Corp. VP: Ops & Finance	J+J Flooring
John Wells	President & CEO	Interface
Joseph Yarbrough (Chair)	President	Carpet and Rug Institute

A major element for improving the California Carpet Stewardship Program is the need to support the growth of the carpet recycling/processing infrastructure in California and create California jobs. This includes creating California markets for recycled content produced by processing post-consumer carpet. Besides AB 2398, this requirement is also supported by the AB 341 recycling goal of 75% by 2020 established in California.

Additionally, AB 32 identifies recycling as one of the strategies California employs to reduce greenhouse gas (GHG) emissions that cause climate change. This program helps put California on the path to meet its goal of reducing GHG emissions to 1990 levels by the year 2020, and ultimately achieving an 80% reduction from 1990 levels by 2050.

The transport and processing of PCC outside of California significantly reduces the greenhouse gas benefit from carpet recycling as shown in California Air Resources Board March 2016 draft report “Estimating Greenhouse Gas Emission Reduction for Recycling Residential and Commercial Carpet.”

Based on the following information from the CARE 2015 Annual Report, there is still much work to be done in this area of expanding the carpet recycling infrastructure in California.

Company	California Companies	Companies Outside of CA
Active Processors Receiving AB 2398 Funding in 2015:		
	Carpet Solutions – Carson CA	CLEAR -- Illinois
	Los Angeles Fiber – Vernon CA	Columbia Recycling -- Georgia
		Gold Pond -- Georgia
		Interface -- Georgia
		Shaw Industries – Georgia
		Tandus Centiva -- Georgia
Tier 2 Manufacturers Receiving AB 2398 Funding in 2015:		
	Reliance Carpet Cushion	American Fiber Cushion – Georgia
		Bonded Logic – Arizona
		CLEAR – Illinois
		Columbia Recycling – Georgia
		GeoHay – South Carolina
		MP Global -- Nebraska
Tier 2 Manufacturers that signed contracts for 2016:		
		Aquifil –Georgia
		M. Chasen & Son – New Jersey
	Total CA Companies Listed: 3	Companies Outside of CA Listed: 15

Summary and Suggestions:

- **The California Council on Carpet Recycling should review and meet to discuss the draft 2017 California Carpet Stewardship Plan prior to submittal to CalRecycle and the public**
- **The 2017 California Carpet Stewardship Plan subsidies, incentives and grant programs should focus on supporting the growth of a carpet recycling infrastructure in California by...**
- **Increasing participation of California stakeholders in the SPC and SPOC Committees.**

Conclusions

- ✓ The California Carpet Stewardship Program continuous to be out of compliance with the AB 2398 statute and regulations.
- ✓ Changes have been instituted by CARE over the past year through Addendum 2 and 3 to help resolve the non-compliance issues but significant results have not yet been seen.
- ✓ Comparisons of carpet recycling rates outside of California demonstrates that subsidy programs do work.
- ✓ The revised subsidy/incentives in the California Carpet Stewardship Program has attracted additional carpet recycling/processing facilities to California planned for startup in 2017 including XT Green's new facility
- ✓ Significantly more PCC will need to be collected to support these facilities
- ✓ The requirement for a new 5-year California Carpet Stewardship Plan beginning in 2017 provides an opportunity to create a more aggressive Plan to increase the rates of carpet recycling, collections and expand the carpet recycling infrastructure in California
- ✓ Besides the California Carpet Stewardship Program created by AB 2398, California's commitment to recycling is demonstrated by mandatory commercial recycling requirements in AB 341, the States 75% recycling goal by 2020 and the inclusion of carpet recycling as a strategy in California's greenhouse emission reduction program.

Carpet recycling is important! It diverts large amounts of difficult waste from landfills, recovers valuable material, saves oil, reduces greenhouse gases and creates green recycling and manufacturing jobs. But carpet recycling needs incentives, subsidies and research to work.

The California Carpet Stewardship Program is important! Together, we can create a successful program in California and have it serve as a guide for carpet stewardship programs throughout the U.S. and beyond.

Based on the above, XT Green respectfully requests CalRecycle to:

- 1) Utilize all appropriate measures to ensure that CARE (and the carpet industry it represents) understands that the State of California has a long-term commitment to carpet recycling, and that...
- 2) The 2017 California Carpet Stewardship Plan must be designed to meet aggressive goals, resolve the current and upcoming issues identified in this document and by others including supporting a carpet recycling infrastructure in California, and that ...
- 3) California stakeholders continue to be represented both through the California Council on Carpet Recycling and by additional representation on the CARE SPC and SPOC.

Thank you for your consideration. Please feel free to contact me at 562-592-5989 or at gail.brice@xt-green.com if you have any questions concerning the above.

Regards -- *Gail Brice*

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Table 1
Impact of Carpet Stewardship Programs
on Carpet Recycling Success

Carpet Recycling in California:

The Only U.S. State with a State Regulated Carpet Stewardship Program¹

	Discarded Carpet (millions of pounds)	Recycled Output (millions of pounds)	% of Recycled Output from Discarded Carpet
2012	357	36	10%
2013	364	44	12%
2014	358	43	12%
2015	345	35	10%

¹ Data taken from Table 1: CARE California Carpet Stewardship Program 2015 Annual Report

Carpet Recycling outside of California:

Voluntary Product Stewardship (VPS) Program (since 2015) only providing Collector/Sorter Subsidies

	Total Discarded Carpet in non-CA States ² (millions of pounds)	Total Reuse & Recycled: total U.S. ^{3,6} (millions of pounds)	California Recycled Output (millions of pounds)	Total Reuse & Recycled (excluding CA) (millions of pounds)	% of Reuse Recycled Output from Discarded Carpet for total U.S (excl. CA) ⁷	% of Recycled Output from Discarded Carpet in CA	% comparison with CA
2012	2577	299	36	263	10.2%	10%	+ .2% ⁵
2013	2628	197	44	153	7.6%	12%	- 4.4%
2014	2584	115	43	72	2.8%	12%	- 9.2%
2015	2491	170	35	135	5.5% ⁴	10%	- 4.5%

² Estimated amount using CA Discard data (12% of the U.S. Population) & extrapolating for remaining 88% outside CA

³ Data from CARE National Annual Report. Note: 2015 results are preliminary.

⁴ First year Voluntary Product Stewardship Program Active

⁵ First full year of California Stewardship Program

⁶ Data for 2012 – 2014 combines Reuse and Recycled. 2015 Data is from VPS which allows for subtracting reuse to better compare with CA recycled output data. Therefore, 2015 data does not include reuse data.