

Carpet Stewardship Briefing Document

May 12, 2014

The Product Stewardship Institute

The Product Stewardship Institute (PSI) is a national, membership-based nonprofit committed to reducing the health, safety, and environmental impacts of consumer products across their lifecycle, with a strong focus on sustainable end-of-life management. We develop and promote legislation and voluntary initiatives whereby manufacturers are responsible for recycling or safely disposing of their products once consumers are done with them. A key part of our work involves coordinating and facilitating multi-stakeholder dialogues that forge consensus on sustainable materials management solutions, including source reduction, reuse, and recycling. We serve as the national product stewardship “voice” for 47 state environmental agencies and hundreds of local governments from coast to coast (our members), helping them create and implement programs that increase recycling, reduce waste management costs, and strengthen local economies. We also leverage our partnerships with nearly 100 businesses, non-U.S. governments, academic institutions, and environmental organizations to achieve these goals. Founded in 2000, PSI is headquartered in Boston, Massachusetts.

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Acknowledgements

This project has been sponsored by the Connecticut Department of Energy and Environmental Protection, U.S. Environmental Protection Agency – Region 1, Chittenden County (VT), All American Waste, USA Hauling, Connecticut Recyclers Coalition, and the Connecticut Product Stewardship Council. PSI would like to thank the many individuals who provided input in the development and review of this Carpet Stewardship Briefing Document.

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I. INTRODUCTION

Purpose of this Briefing Document

The purpose of this Carpet Stewardship Briefing Document is to prepare participants for a Product Stewardship Institute (PSI) facilitated meeting that will be held in Hartford, Connecticut, on May 14-15, 2014. The meeting will be national in scope, but focus on Connecticut and the northeast. The briefing document includes a proposed issue statement and project goals, along with key issues and potential solutions. The information was derived through discussions with key stakeholders, as well as written reports and other documentation. The briefing document is part of PSI's Carpet Stewardship Initiative. **It reflects varying perspectives on the management of carpet and not a unanimous approach.**

Scope of Project

This project is focused on commercial and residential broadloom carpet and modular carpet tiles, including natural and synthetic face fibers. It also includes artificial turf, as well as padding and other materials used in conjunction with a carpet. It does not include area rugs.

Proposed Issue Statement

Americans generate nearly 3.9 million tons of scrap carpet and rugs each year.¹ Not only does scrap carpet take up considerable landfill space, but it is also bulky and difficult to handle, making it costly for local governments to manage. Carpet is designated as “oversized municipal solid waste (MSW)” in Connecticut, and is one of the top ten materials by weight disposed of annually.² Carpet is also a top regional priority in the northeast, as determined by PSI and the Northeast Waste Management Officials Association (NEWMOA) in separate regional product prioritization discussions. Recycling carpet creates jobs, reduces municipal waste management costs, saves resources, and can significantly reduce greenhouse gas emissions³ and reduce energy use. Yet, in 2012, only 7.5 percent of carpet was actually recycled⁴ despite a voluntary industry agreement in 2002 that committed to increase recycling and decrease disposal.⁵ Further challenges to recycling have occurred recently as carpet manufacturers have begun to make carpet with greater quantities of lower-cost polyethylene terephthalate (PET)—the plastic used to make single-use plastic beverage containers—which currently has no strong recycling markets.

Project Goals

The following are the goals for the Carpet Stewardship Initiative:

- Goal 1:** Maximize the collection and recycling of scrap carpet while minimizing cost.
- Goal 2:** Develop a long-term financing system (e.g., extended producer responsibility) to manage scrap carpet in a manner that alleviates the financial burden faced by governments and supports a sustainable recycling industry.
- Goal 3:** Increase the procurement of recycled products made from scrap carpet.
- Goal 4:** Support local businesses that recover scrap carpet for reuse and recycling.
- Goal 5:** Develop a model carpet bill that can be harmonized in the U.S., and perhaps throughout North America.

Proposed Meeting Outcomes

The following proposed meeting outcomes for the May 14-15, 2014 PSI Carpet Dialogue Meeting in Hartford, CT are intended to establish joint expectations:

1. Develop a greater understanding of stakeholder perspectives.
2. Identify key remaining issues and potential strategies for resolution.
3. Agree in concept on elements of a model carpet product stewardship bill; and
4. Agree on a process for resolving remaining issues and finalizing a model bill.

II. MANUFACTURING AND SALES

In 2010, an estimated 1.3 billion square yards of carpet were produced in the US, down from 1.6 billion in 2007. Carpet sales fluctuate annually with the economy and changes in preference for flooring. The average life of residential carpet is seven to ten years, while commercial carpet lasts approximately five to eight years.⁶ The two largest carpet manufacturers, [Shaw Industries](#) (Dalton, GA) and [Mohawk Industries](#) (Calhoun, GA), produce approximately sixty percent of all carpet sold. Other significant manufacturers are [Milliken and Company](#) (Spartanburg, SC), [Beaulieu of America](#) (Adairsville, GA), and [Interface Flooring Systems](#) (Atlanta, GA).⁷ About eighty percent of carpet in the US is manufactured by mills in Georgia.⁸

Face fiber represents almost 50 percent of a carpet's weight, and plays a large part in determining its recyclability. The backing system and adhesive comprise the remaining weight. Two types of nylon have traditionally been used—Nylon 6, which represents about 30 percent of all carpet currently recovered, and Nylon 6,6, which makes up about 25 percent. Recently, polyethylene terephthalate (PET) plastic has become a popular alternative, as it is available at just over half the material cost of Nylon 6⁹ without much discernible loss in quality; PET accounts for about 30 percent of recovered carpet. Olefin (polypropylene) is about eight percent. Other fibers, such as Triexta PTT (polytrimethylene terephthalate) and wool make up the remainder.¹⁰ In addition to providing carpet manufacturers with a new low-cost product for the market, the advent of PET use in carpet face fiber bolstered the PET bottle recycling industry by introducing a new end-use for the lower-quality material that is typically generated in curbside recycling programs. Bottle-to-bottle recycling usually relies on cleaner loads collected through container deposit programs.

For the purpose of this project and document, area rugs are considered a separate product category from carpet. Although some area rugs are essentially carpet with a border attached, and some carpet manufacturers also make area rugs, area rugs are often manufactured differently from carpet and use materials not typically used in carpeting, such as jute and cotton.

The largest carpet distributor in the Northeast is NRF Distributors, based in Augusta, Maine. They receive giant rolls of carpet from the manufacturers, cut and reroll it into smaller amounts as ordered, and distribute to carpet retailers (other than big box stores) throughout the region. Trucking from the manufacturers is contracted; NRF runs the trucking routes to their customers.¹¹

III. MANAGEMENT OF SCRAP CARPET

Overview

Nationally, 7.5 percent of scrap carpet was recycled in 2012, with less than one percent being reused.¹² The majority of the remaining carpet is disposed of in landfills or burned in waste-to-energy plants or cement kilns.¹³ Since 2000, carpet disposal has grown from nearly 2.3 million tons to nearly 3.6 million tons annually.

In 2002, a consortium of carpet and fiber manufacturers, representatives of the Carpet and Rug Institute, state and local government agencies, non-governmental organizations, and the U.S. Environmental Protection Agency (USEPA) signed a [Memorandum of Understanding](#) (MOU) establishing post-consumer carpet recycling goals, stakeholder roles, and responsibilities. The agreement established the roles and responsibilities for the [Carpet America Recovery Effort](#) (CARE), an industry-led, third party organization that assists in the development of a carpet collection and recycling infrastructure, and identifies viable markets for post-consumer carpet. The consortium agreed to achieve a landfill diversion rate of 40 percent by 2012, with a 20 to 25-percent recycling rate, and with the carpet industry taking financial responsibility for meeting these goals. In 2010, CARE reported a national recycling rate of only 4.5 percent. The [second round of MOU negotiations](#) concluded in the fall of 2011 with no agreement for future national goals.

In 2010, California passed the nation's first carpet producer responsibility law, [AB 2398](#), which put into place a mandatory recycling program operated by CARE. As of January 2013, CARE reported a recycling rate in California of about 14 percent, double the national average.¹⁴ Through CARE, manufacturers design and implement their own stewardship program to reach specific recycling goals, and report to the state annually on their progress. California's state environmental agency, [CalRecycle](#), reviews and approves plans and progress reports, and provides enforcement and oversight to ensure a level playing field among carpet manufacturers. CalRecycle has the ability to assess civil penalties to anyone in violation of any provision of AB 2398. Other service providers, such as processors and installers, negotiate with carpet manufacturers to participate in the management system.¹⁵ California's carpet program is funded by an assessment paid on each square yard of carpet purchased. This assessment was set in statute at \$0.05 per square yard, through January 1, 2013. Thereafter, manufacturers set their own assessment, to be approved by CalRecycle. CARE chose not to propose a change to the assessment in its most recent plan, which was approved on January 21, 2014.¹⁶

Removal

Seventy percent or more of used carpet is removed by a professional contractor.¹⁷ Most consumers have flooring installers remove their old carpet upon installation of new flooring. This service is typically an additional cost to installation in some states, including Connecticut, but is included in the cost of services in other areas. Used carpet is also removed by demolition and deconstruction contractors, and by do-it-yourself homeowners. In some areas of the country, carpet removed by professionals is nevertheless frequently left with the homeowner for their disposal.

Recycling

Carpet is recycled into a variety of end-products. Currently, 58 percent of recycled carpet is used in engineered resins; 27 percent is used in new carpet (20 percent in fiber, 7 percent in backing), and 10 percent is used in carpet padding. Ninety-seven percent of post-consumer carpet processed in the U.S. goes to U.S. markets.¹⁸ These data focus on the recycling of face fiber, which is the carpet component that is most recyclable.¹⁹ The remaining materials—e.g., polypropylene backing and calcium carbonate filler—are referred to as the “carcass” of recycled carpet.

Nylon face fibers, which are durable and have residual value, are the most readily recyclable material used in carpet. There are many fewer current end markets for recycled polyester or PET, which is a growing part of the collection stream. While many foodservice products (e.g., water bottles) are made from PET, recycled carpet currently cannot be used in these products due to residual impurities. Manufacturers seeking a source of recycled PET as a feedstock look to recycled beverage containers, which are less contaminated than old carpet. PET carpet is recyclable into decking materials and other products, but recycling costs are currently too high for these applications to be viable without incentives. In addition to the rise in PET, some carpet uses a combination of Nylon 6 and Nylon 6,6, (or other fiber combinations) which contaminates the load and lowers recyclability.

Connecticut, Maine, New Hampshire, and Vermont have no organized carpet recycling options in-state. One established mattress recycler in Connecticut has expressed interest in opening a carpet recycling operation, and says 40-60 jobs would be created. However, since many of the end-markets for recycled carpet made into new carpet are in Georgia, the cost of transportation to markets is a significant hurdle. Adding to transportation costs is the dirt and other non-fiber materials that add weight but no value. California’s rural carpet program addresses this issue by cleaning collected carpet prior to shipment; however, the PET carpet in the mix can be a burden if it is collected and transported, but does not generate any revenue.

The following carpet recyclers operate in the northeastern U.S., and are listed with the states in which they provide services:²⁰

Company	Where Services are Offered	What they Do	Website
Alleghany Contract Flooring	Massachusetts only	Collect, broker, sort	www.alleghenycontract.com
CarpetCycle	Connecticut, Delaware, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania	Remove, collect, process, sort, broker, reuse	www.carpetcycle.com
Conigliaro Industries	Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont	Collect, process, manufacture	www.conigliaro.com

Company	Where Services are Offered	What they Do	Website
DC Foam Recycle	Connecticut, Delaware, Massachusetts, Maryland, New Jersey, New York, Pennsylvania, Rhode Island, Virginia	Collect, broker, sort	www.recyclefoam.com
GP Land & Carpet Corp.	New York	Collect	www.gpcarpet.com
Long Island Carpet Recycling	Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont	Collect, remove, process, sort, reuse	www.LICarpetRecycling.com
Starnet Reclamation	Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont	Collect and facilitate landfill diversion of PCC.	www.starnetflooring.com
State Contract Carpet	Rhode Island, Connecticut, Vermont, New Hampshire, Maine, Massachusetts, New York	Collect	www.statecarpet.com

Disposal

Carpet accounts for between 1.7 and 3 percent of MSW in northeastern states, and an average of 1.5 percent of MSW generation across all US states. In Connecticut, carpet is referred to as “Oversized MSW,” and local governments may charge above their usual disposal fees to manage it. The majority of carpet across the US is disposed of with MSW or mixed with construction and demolition debris, and is either sent to an in-state or out-of-state landfill or waste-to-energy facility. The best available disposal cost estimate is based on average tipping fees. This is because carpet disposal costs are not recorded independently of overall trash disposal costs. With an average landfill tipping fee of \$45 per ton in 2012,²¹ and total carpet generation at nearly 3.9 million tons,²² the estimated total cost of carpet disposal in the US was about \$174 million dollars. This cost, however, does not account for special handling and transport, which ranges broadly depending on the distance from pick-up to the transfer station or disposal facility.²³ Additional research is needed to more accurately measure the true cost of carpet disposal to local governments. Waste managers would also benefit from the development of an accounting tool to help them estimate the cost of carpet management distinctly from their tipping fee. Having a clearer picture of the cost of carpet disposal would allow for better comparison of carpet recycling policy options.

At landfills and incinerators in the northeast, tipping fees range from \$45-\$150 per ton. Fees in other areas of the nation are much lower – under \$20 per ton in some states. Higher tipping fees create an incentive for illegal dumping of carpet, particularly where there is a lack of lower-cost recycling options as an alternative to disposal. To avoid paying their local waste facility’s disposal fee, consumers or contractors sometimes dump scrap carpet in abandoned buildings, vacant lots, and infrequently used alleys or roadways, among other locations.²⁴

IV. SUSTAINABLE FINANCING

Waste management costs in the United States (e.g., collection, reuse, recycling, and disposal) are largely borne and/or regulated by state and local agencies through government programs and contracts, and are paid for through taxes, solid waste utility rates, direct charges to individual households, or fees charged to consumers when they return a product for recycling or disposal. There are two basic types of producer responsibility financing systems that seek to cover waste management costs by incorporating these costs into the purchase price of a new product: (1) cost internalization and (2) eco-fees. In general, under both systems, manufacturers take responsibility for the collection, transportation, and recycling of the products, often by creating an industry-run stewardship organization to coordinate services, collect payments from producers, and manage the overall system. In the case of California's carpet law, CARE uses an incentive program to provide financial assistance to carpet processors.

Cost Internalization

This type of producer responsibility financing system involves manufacturers and importers that internalize post-consumer management costs into the cost of doing business so that they are invisible to the consumer, even though the costs may be passed on to the consumer. In the U.S., cost internalization EPR systems have been implemented for batteries, electronics, thermostats, auto switches, and other products.

Eco-fees

A second type of producer responsibility financing system allows manufacturers to pass on a fee to the consumer (visibly or invisibly) for post-consumer product management costs. The fee is rarely set in the legislation, but instead is proposed by the manufacturers' stewardship organization and approved by the state oversight agency. In the U.S., eco fee EPR systems have been implemented for paint, mattresses, and carpet (California).

V. OVERVIEW OF KEY ISSUES AND POTENTIAL SOLUTIONS

The following issues regarding carpet stewardship have been identified as those issues that have posed challenges to moving forward on existing carpet stewardship bills in the U.S. and are thus reasons for engaging stakeholders. These issues are representative of a range of perspectives. They do not represent a consensus among all stakeholders. Instead, they are indicative of the concerns expressed by a range of stakeholders. In general, carpet stewardship bills are introduced to meet the Project Goals (see page 1). These bills can also address the issues outlined below.

Issue #1: Carpet design changes have increased the cost of recycling.

Polyester carpet sales accelerated significantly during the financial downturn in 2009, as manufacturers responded to consumer demand for a lower-cost product. Since then, the percentage of polyester in the waste carpet stream has grown from 5 percent to an estimated

35-40 percent. As there are no significant current market outlets for this material, managing scrap carpet made from polyester places a financial burden on carpet collectors and processors.

Potential Solutions: Since EPR legislation requires manufacturers to take financial and management responsibility for scrap carpet, they will directly benefit from the value of the source fiber used in manufacturing, particularly under a cost internalization financing system. If the source fiber, once collected as scrap, has a high recycled market value, manufacturers will reap that benefit. However, if they use a source fiber that, once collected as scrap, has a low market value, they must pay the added cost to recycle that material. This is what is known as the circular economy, and it will provide carpet manufacturers with incentive to consider the post-consumer value of the source fibers they use to make new carpet and to support the development of higher-value recycling options. Under an eco fee system, some EPR bills provide an extra payment to processors that recycle lower-value polyester carpet and/or an extra fee on the production of PET carpet. Another option to be considered in an EPR bill is to provide financial incentives for the research and development of better technologies for recycling PET carpet into products with established markets, such as new carpet.

Issue #2: Lack of markets for carpet-derived commodities and the products made from them lowers the value of recycled carpet.

For increased carpet recycling to be sustainable, and for scrap carpet to hold its intrinsic value as a resource, there need to be more end markets for products made from recycled carpet. Specifically, markets are lacking for PET, PTT, and blended carpet, and also for the “carcass,” which makes up about 50 percent of carpet by weight. In California, which has the nation’s only EPR law for carpet, 50 percent of recovered carpet is actually recycled, and market development has been identified as a priority in terms of creating more carpet-derived products and more demand for these products.

Potential Solutions:

- Providing financial incentives to assist in research, development, and specifications;
- Conducting research to identify additional large-volume, domestically manufactured products that can be made using carpet-derived commodities;
- Facilitating the value chain for the abovementioned materials, from primary processing to end-use;
- Requiring that manufacturers provide more transparent, robust information about their products (performance, environmental attributes, cost, availability, and specifications);
- Adopting policies to encourage the purchase of products with post-consumer carpet content; and/or
- Encouraging manufacturers to engage with government or large institutional procurement programs.

For example, CARE provides a financial incentive to manufacturers who make new products with PET from California carpets.²⁵ In terms of policy, the California State Administrative Manual states that all carpet purchased by California state agencies shall meet the NSF/ANSI 140-2007 standard²⁶ at its Platinum level.²⁷ Illinois Senate Bill 3546, introduced earlier in 2014,

goes a step further, mandating that carpet purchased by Illinois state agencies also contain at least 35 percent post-consumer recycled content from discarded carpet. Similar market development policies could also be applied at the local government level. Some vendors in California have registered as a supplier on the e-procurement system, are certified as a small business or disabled veteran business enterprise, bid on solicitations or have their product accessible through the federal multiple award schedules, and market directly to departments.

Issue #3: Much scrap carpet enters the solid waste stream and can no longer be recycled owing to contamination.

Once removed from buildings, most carpet is mixed with other waste materials and transported for final disposition to a landfill or waste-to-energy facility. This carpet often becomes wet and contaminated, and can no longer be recycled.

Potential Solutions: Some solutions to this issue focus on recovering carpet at the time it is removed (e.g., developing programs for collecting scrap carpet with retailers and installers, mandating scrap carpet recovery, or providing a financial incentive, such as a payment or tax rebate to those recovering carpet). Other methods, such as implementing a disposal ban, or allowing carpet to be picked up from curbside for recycling, keep carpet separated from regular trash, promoting more recovery and recycling.

Issue #4: Barriers to entry into the carpet recycling business

There are likely numerous barriers to sustaining a carpet recycling business in the U.S., some of which have been described in the other three issues. Barriers might occur in the collection, consolidation, and processing of carpet. The issue that was raised to PSI by carpet recyclers with whom we spoke relates to the cost of equipment to detect carpet fiber type. Carpet manufacturers use a variety of face fibers in carpet production, which must be recycled separately to ensure a clean and marketable product. However, for recyclers, separating the different types of fibers requires expensive equipment, such as scanners that cost approximately \$20,000. This cost is particularly hard to bear for small and new recycling operations. Removing this cost would make it more financially feasible for entrepreneurs to start and sustain their carpet recycling businesses.

Potential Solutions: Many carpet manufacturers already stamp the back of their product with their brand label. Manufacturers could dramatically reduce recycling costs—thereby reducing barriers to entering the carpet recycling business—by also stamping the back of carpet with information about the composition of its face fibers and other component materials. Recycling rates for other material streams, such as plastic containers, have increased as a result of similar stamps and coding systems, which simplify the recycling process.

VI. VOLUNTARY MANUFACTURER SUPPORT

Over the past six months, in response to growing interest among state agencies to develop and introduce carpet EPR legislation, and since the announcement of the May 14-15 carpet stewardship stakeholder meeting, negotiations intensified among national carpet manufacturers, mills, and recyclers. These discussions have led to a proposal for a voluntary

carpet stewardship subsidy to be paid by the manufacturers to the recyclers to reduce their recycling costs. While a voluntary fee would provide interim support for the carpet recycling industry, the arrangement as currently reported would not cover carpet management costs borne by state and local governments. The details of this proposal and any subsequent agreement are still emerging, and are being actively discussed at the May 6-8 CARE annual conference in Seattle. Further information about this proposal and any resulting agreement will be discussed during our carpet stewardship meeting in Hartford, Connecticut.

VII. ELEMENTS OF AN EPR BILL FOR CARPET

The following elements, once discussed and finalized, will comprise the main components of an extended producer responsibility (EPR) model bill for carpet. Once completed, this model is likely to be introduced in multiple states during the 2015 and 2016 legislative sessions. Following the passage of each new law, program implementation (including due dates of initial manufacturer stewardship plans) would be expected to begin within six months to one year of each bill signing.

Scope of Products

The scope of products identifies the types of materials affected under the bill. Examples for carpet might include: residential and commercial broadloom; carpet tiles; backing, padding, and other underlayment; and artificial turf.

Funding Mechanism

The funding mechanism specifies how the program will raise funds for collection and recycling activities and administrative costs. This element includes whether the program uses the cost internalization model or an eco-fee. Under an eco-fee model, the bill should define initial fee amounts, how future fees are set (including criteria for incentivizing the production and/or sale of readily-recycled carpet), and whether fees should be visible on consumer receipts.

Incentive Payments

Some EPR laws promote recycling of specific target products by providing cash incentives to collectors and processors, often by weight or volume of target material managed. Some also include disincentives for manufacturers of products containing targeted materials. This element includes any of those types of policies. Some states elect to let manufacturers decide whether incentives are necessary to reach the goals set forth in their plans.

Performance Standards

Performance standards encompass the recycling goals to be reached by the program or the methodology by which responsible parties must set their own goals. Performance standards are often numerical targets for annual collection or recycling volumes, weights, or rates, but may also include qualitative measures.

Convenience Standards

Convenience standards (e.g., number of collection sites or density of collection sites per capita) represent the minimum level of service to be provided to ensure that consumers across the entire state have access to qualified collection and recycling services for the target products. Standards can be set in statute or left to manufacturers to define in their stewardship plans submitted to the state environmental agency.

Stewardship Organization

This bill element defines whether responsible parties must join a representative organization in complying with the law, or whether they may create and implement their own individual plan. The bill must also set dates by which manufacturers must join stewardship organizations, and indicate whether multiple stewardship organizations are allowed.

Outreach and Education Requirements

This element defines the minimum requirements in the statute to ensure that consumers, responsible parties, retailers, and others are educated about the program, as well as any stipulations on how responsible parties must include outreach and education in their plans and annual reports. It also specifies who funds the education and outreach efforts and related evaluation requirements.

Stewardship Plan Contents

This bill element is a key component to responsible parties meeting their legal requirements. Stewardship plans are considered the program roadmap, and include how the responsible party will ensure consumer convenience, meet the performance goals, provide effective education and outreach, fund the program, and other key aspects. The section also describes the process and schedule by which plans are approved by the state environmental agency and updated by the responsible party.

Audit Requirements

This element describes the program phases when an independent financial audit, or other type of independent audit, will be required.

Anti-Trust

Language is included in this section to ensure that responsible parties (or stewardship organizations and their members) are immune from liability for any claim of antitrust law or unfair business practice related to the execution of their responsibilities under the law.

Reporting Requirements

This section lays out the minimum information that responsible parties must include in each report to the state environmental agency, often including program performance data, a narrative description of program activities and outcomes, an evaluation of the funding mechanism, an independent audit, and other items.

Penalties for Violation

This bill element provides a schedule of specific penalty amounts and infractions.

Administrative Fees

This section includes the amount of money to be paid to the state agency annually to administer the program; it may include a maximum amount.

Implementation Schedule

An implementation schedule includes key milestones, such as when the act takes effect, when manufacturers must join a stewardship organization, when plans are due to the state and the amount of time before a plan must be approved or rejected, and when carpet from non-participating brands may no longer be sold.

Disposal Ban

Some EPR bills include a disposal ban to increase the flow of the target material to recyclers. Such provisions include the date by when the ban goes into effect.

State Procurement Requirements

Some bills seek to spur the demand for recycled-content products by requiring state government procurement offices to buy recycled. The bill may define existing purchasing standards to follow (e.g., [NSF/ANSI 140](#)) and set other procurement goals.

APPENDIX A: REMAINING QUESTIONS

The following questions remain to be answered at the close of the information-gathering period for this document. Getting answers to these questions is the first step to closing the data gaps that currently limit our ability to accurately assess national average costs of carpet installation, removal, and end-of-life management. If you have relevant information to provide to these questions, please contact PSI's Evan Newell at evan@productstewardship.us, or present your information at the stakeholder meeting in Hartford, CT, on May 14-15, 2014.

General

- What are the generally acknowledged business categories that sell carpet? For example: retailers, full-service residential installers, commercial installers, etc.
- What percentage of the carpet retail market does each type of seller hold?
- What are the largest carpet retailers in the US?
- What is the average cost per square yard for installation?

Removal

- What is the average cost per square yard for carpet removal?
- Are there any particular health hazards associated with carpet removal?

Recycling

- Besides face fibers, what other components of carpet are recycled?
- What other components of carpet are NOT recycled?
- Why are mixed face fibers (Nylon 6 with Nylon 6,6) a recycling challenge?
- Any other comments that are important in describing the carpet recycling process/business?

¹ “Municipal Solid Waste Generation, Recycling, and Disposal in the United States Tables and Figures for 2012,” Table 12. US EPA. Available at www.epa.gov/waste/nonhaz/municipal/pubs/2012_msw_dat_tbls.pdf.

² “Connecticut State-wide Solid Waste Composition and Characterization Study.” CT DEEP. Available at www.ct.gov/deep/lib/deep/waste_management_and_disposal/solid_waste/wastecharstudy/ctcompositioncharstudymay2010.pdf.

³ EPA WARM Model Version 12, materials information: carpet. February 2012. Available at <http://epa.gov/epawaste/consERVE/tools/warm/pdfs/Carpet.pdf>

⁴ “Municipal Solid Waste Generation, Recycling, and Disposal in the United States Tables and Figures for 2012,” Table 13. US EPA. Available at www.epa.gov/waste/nonhaz/municipal/pubs/2012_msw_dat_tbls.pdf.

⁵ “A Memorandum of Understanding for Carpet Stewardship.” Available at www.carpetrecovery.org/pdf/CARE_MOU/MOU-January%202002.pdf

⁶ Presentation by Washington Department of Ecology’s Shannon McClelland at joint conference of the Product Stewardship Institute and North American Hazardous Materials Management Association, September 28, 2011.

⁷ Market share statistics from www.accuval.net/insights/industryinsights/detail.php?ID=150

⁸ Presentation by Washington Department of Ecology’s Shannon McClelland at joint conference of the Product Stewardship Institute and North American Hazardous Materials Management Association, September 28, 2011.

⁹ Data from *Carpet Fiber Update* in the trade journal *Floor Focus* (available at www.floordaily.net). As of March 2014, the market price of recycled polyester fiber is \$.70 cents per pound, virgin polyester is \$.80 per pound, and Nylon 6 is \$1.30 per pound. No price is given for Nylon 6,6 or other materials.

¹⁰ Collection and sorting data from presentation by CARE Sustainable Funding Oversight Committee, updated February 2014 (available at <http://www.calrecycle.ca.gov/Carpet/Plans/CARE2013Q4.pdf>). Sales data were unavailable, so collection and sorting data are substituted as estimates for sales. Mohawk’s website says Nylon accounts for 65 percent of all face fibers in carpet, suggesting this estimate is a close approximation. www.mohawkflooring.com/flooring-guide/carpet-guide/carpet-fibers.aspx

¹¹ Northeast Waste Management Officials Association, carpet management survey, unpublished, March 2014.

¹² CARE 2011 Annual Report, Figure 2. Available at www.carpetrecovery.org/pdf/annual_report/11_CARE-annual-rpt.pdf.

¹³ Ibid. CARE 2011.

¹⁴ “Annual Report to CalRecycle, July 2011 - June 2013, California Carpet Stewardship Plan.” CARE. Available at www.carpetrecovery.org/pdf/AB2398/Reports/AB2398_2011-2013_AnnualReport.pdf

¹⁵ Information taken from CalRecycle’s Carpet Stewardship Program webpage, available at www.calrecycle.ca.gov/Carpet/Program.htm

¹⁶ “California Carpet Stewardship Plan – Revised October 2013.” CARE. Available at www.calrecycle.ca.gov/Carpet/Plans/2013OctV3pt0.pdf

¹⁷ Conversation with Sean Ragiell, CarpetCycle, on April 14, 2014.

¹⁸ Ibid. CARE, 2011

¹⁹ See CARE website: http://www.carpetrecovery.org/pdf/great_ideas/Product_Brochure.pdf. April 30, 2014.

²⁰ Compiled by the Northeast Recycling Council, April 2014.

²¹ "US Landfill Tipping Fees Reach \$45 per Ton; Slow Volume Growth." Waste Business Journal, October 2012. Available at <http://www.wastebusinessjournal.com/news/wbj20121003A.htm>

²² "Municipal Solid Waste Generation, Recycling, and Disposal in the United States Tables and Figures for 2012." US EPA, February 2012. Available at http://www.epa.gov/waste/nonhaz/municipal/pubs/2012_msw_dat_tbls.pdf

²³ Ibid, Northeast Waste Management Officials Association

²⁴ Illegal Dumping Prevention Guidebook. EPA, 1998. Available at http://www.epa.gov/region5/waste/illegal_dumping/downloads/il-dmpng.pdf

²⁵ CARE provides a \$0.12 per pound financial incentive. Source: CARE carpet stewardship plan version 3.2, pp. 31-32. October 2013. Available at <http://www.calrecycle.ca.gov/Carpet/Plans/2013OctV3pt0.pdf>.

²⁶ NSF/ANSI 140: Sustainability Assessment for Carpet is a sustainability standard for carpet developed by the NSF [National Center for Sustainability Standards \(NCSS\)](#). This standard provides performance requirements for individual products and the manufacturers. It employs a point system based on life-cycle assessment principles for the following metrics: public health and environment; energy and energy efficiency; biobased, recycled content materials, and environmentally preferable materials; manufacturing; reclamation and end-of-life management; and innovation.

²⁷ Details can be found in the [revised DGS Management Memo 10-01](#) (PDF, 28 KB) (December 2009). A searchable list of NSF/ANSI 140 carpet can be found at [CRI's website](#).