

REUSING AND RECYCLING

CARPET in Rural Communities

This guide is designed to help local government officials in rural communities better understand the options available for reusing and recycling carpet. It is one of a series of guidance documents developed by NEWMOA to help rural communities consider options for managing bulky wastes and diverting them from landfill disposal. The other best practice documents focus on **furniture, mattresses, and large rigid plastic items** and are available at: www.newmoa.org/solidwaste/projects/bulky.

Benefits of Reusing & Recycling Carpet

Municipalities and tax payers benefit from reuse and recycling of carpet by:

- Saving money on landfill disposal costs
- Conserving energy and raw materials
- Returning products and materials back into the economy and fostering job creation
- Helping people who can use an area rug but cannot afford to buy new

Unwanted carpet is difficult to handle and transport and consumes increasingly scarce landfill space. Disposing of carpet is challenging for homeowners and expensive for local waste authorities, particularly in rural communities. Some of what is thrown away might be reusable or contain materials that, through recycling, can replace virgin material in the manufacturing of new products reducing their carbon footprint and overall environmental impact.



The Carpet Problem

In general, there are two types of carpet: area rugs and broadloom carpet used for wall-to-wall installations. Area rugs that are relatively small (generally 10 feet by 10 feet or less) and in good condition are appropriate for reuse. When a homeowner or business decides to remove wall-to-wall carpet it is generally not in reusable condition, but it might be appropriate for recycling. Some area rugs are made from broadloom carpet and might be recyclable. However, many area rugs are manufactured by a different process and from different materials, such as jute and cotton and cannot be recycled.

DID YOU KNOW?

- Waste carpet and padding made up 5 percent of all the waste thrown out by Vermont residents in 2011 – over 12,000 tons
- Of all of the solid wastes generated by communities, a 2011 EPA study found that recycling carpet has one of the greatest greenhouse gas reduction potentials, exceeded only by recycling corrugated cardboard and office paper, and composting food scraps

Reuse

Many charities accept small area rugs that are in good condition for donation. These may include local homeless shelters, battered women's shelters, and refugee resettlement programs. Other charitable organizations, such as Habitat for Humanity ReStores, Goodwill, St. Vincent De Paul, and Salvation Army accept area rugs for donation for re-sale or distribution. Households may also be able to donate or re-sell a used area rug directly through yard sales, or online exchanges, such as Craig's List (www.craigslist.org) or the Free-cycle Network (www.freecycle.org). In all cases, the rug needs to be stain-free and

Furniture & Carpet Disposal	
Please request placement of these items, do not throw into container.	
Twin /Single Mattresses or Boxsprings	\$30 each
Full /Queen /King Mattresses or Boxsprings	\$30 each
Couch	\$20 each
Loveseat	\$15 each
Upholstered Chair	\$10 each
End tables, wooden chairs, kitchen/dining room tables, bookcases, bureaus	\$5 each
Area rug	\$10 each
Wall-to-wall carpet	\$25 each
Sink, toilet	\$10 each

An example of current fees for disposal.

stored where it remains clean and dry until donation. Communities can help facilitate reuse by educating households about local donation options and including them in the swap area/shop if there is one at the local transfer station.

Recycle

There are commercial companies that sort and process used carpet to extract materials for recycling. Broadloom carpet is composed of face fiber, backing, and adhesive. 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. The waste carpet received by a processor must be dry and free of mold. The processor sorts the incoming carpet using a specialized hand-held identification scanner to identify the fiber type. If the face fibers are nylon or Olefin (polypropylene), the fibers are sheared from the backing materials and mechanically processed. The nylon and Olefin fibers are sold for reuse in a number of applications, including back into new carpet. Most processors dispose of the backing material. However, there are processors with sophisticated equipment that can also process the backing material mechanically and chemically to recover polypropylene and calcium carbonate which both have resale value.

Historically, most broadloom carpet was made from Nylon 6 and Nylon 6,6 which have recycled market value. Recently, polyethylene terephthalate (PET) polyester has become a popular face fiber alternative due to its lower cost. However, there is virtually no market for the fibers from used PET carpet. Carpet made with PET fibers are sent for disposal, preferably at a waste-to-energy facility where its fuel value can be realized. The processor must pay for disposal. As the percentage of PET rises while that of nylon drops, the processor is selling less and paying more for disposal. Previously, processors in the northeast accepted loads of mixed carpet delivered to them without a fee. However, under current market conditions, mixed loads of carpet do not contain enough value to cover costs and therefore, processors charge a drop-off fee.

Communities can facilitate carpet recycling for their residents through a collection program. Due to transportation costs, a program would need to collect a full truckload of carpet before it is shipped. Carpet must be kept dry during storage and delivery to the processor. Small rural communities that are geographically dispersed may incur relatively high storage and transportation costs due to the small volumes available for collection and long transport distances. A regional collection location can help alleviate these costs. Having more than one town participate in a collection and recycling program can help reduce costs for each municipality. The costs of collection, transportation, and the drop-off fee for carpet recycling might be less than costs associated with disposal, depending on the relative locations of the recycling and disposal facilities, and their respective tipping fees.



Hand-held Identification Scanner

Changes Are Coming That Will Help

The Carpet and Rug Institute (CRI) is the trade association of carpet manufacturers, and in May 2016 they announced an agreement to start labeling the back of carpet with a standard set of codes for the type of face fiber used. This will make sorting easier and eliminate the need to purchase an expensive handheld ID scanner. Residents will be able to know what type of carpet they have and municipal recycling programs will be able to limit collection to carpet with recycling value. Labeling is expected to begin late in 2016, but it will take a few years to start showing up in the waste stream.



Carpet Shearing Machine

Alternatively, a collection program could sort incoming carpet using an ID scanner and only ship loads of carpet made from nylon or Olefin for recycling. The processor would not charge a drop-off fee and might even pay for it. However, the ID scanner technology costs more than \$15,000, which is more than most municipal programs can afford. The collection program would also incur the labor costs to do the sorting and bear the costs of disposing of carpet that is not made from marketable materials. To lower the cost to an individual community, several towns could partner to purchase an ID scanner and set up a regional collection and sorting program.

Facilities in the Northeast that Sort and Process Carpet for Recycling

CarpetCycle

Newark, NJ
www.carpetcycle.com

Conigliaro Industries

Framingham, MA
www.conigliaro.com

Successful Municipal Recycling Program

The Borough of Hawthorne, is a community of approximately 18,000 residents located in northern New Jersey that began a carpet recycling program in the early 2000s. Carpet and padding are prohibited from disposal through the municipal curbside pick-up program and must be brought to the community's Recycling Center. The Recycling Center accepts many different materials, including electronics and textiles. Residents put their carpet and padding in a covered 30 cubic yard container. Each year Hawthorne transports four or five full containers to the CarpetCycle facility which is approximately 20 miles away. In 2016, CarpetCycle charged Hawthorne \$250 per container. To offset these costs and help generate funds to run their recycling programs, Hawthorne charges residents a drop-off fee of \$5 for carpet that is rolled up to a maximum length of 5 feet and a diameter of 12 inches. If the carpet is larger, the fee depends on the size and quantity and can be up to \$20. The Recycling Center is open seven days a week and is staffed to collect fees and ensure items are put in the correct location.

Planning for Collecting Carpet for Recycling

CHALLENGE	POSSIBLE SOLUTION
Finding a convenient location with storage capacity, such as a building, shed, or trailer where the carpet can be kept away from the elements until it is transported to a recycling facility	<ul style="list-style-type: none"> Utilize a local transfer station that has a storage shed or building where carpet can remain clean and dry Buy or rent a trailer or other collection container for temporary storage and transport
Transporting collected items to the recycling facility	<ul style="list-style-type: none"> Charge a drop-off fee to help offset transportation costs Several towns can collaborate on pick-ups to increase economies of scale and split costs Set up a landfill and/or a transfer station as a drop-off point for a regional area
Recycling facilities charge a fee to accept loads of mixed carpet	<ul style="list-style-type: none"> Charge a drop-off fee to help offset recycling facility fees Sort carpet and only ship the carpet that has recycling value so there is no fee
Sorting carpet before shipment requires purchase of the ID scanner and labor	<ul style="list-style-type: none"> Partner with a local organization or business that can provide volunteers Coordinate with other communities to share costs Charge a drop-off fee to help offset sorting costs
Charging a drop-off fee might limit participation	<ul style="list-style-type: none"> Set the fee lower than the drop-off fee that is normally charged for carpet disposal
Promoting the program	<ul style="list-style-type: none"> Include information in the community's existing marketing campaigns for household hazardous waste, solid waste, or recycling

Extended Producer Responsibility

Extended producer responsibility (EPR) is a mandatory program that includes, at a minimum, the requirement that the producer's responsibility for its product extends to post-consumer management of that product. Generally, consumers must be able to drop-off their used item at no charge and the drop-off locations must be convenient, such as the local transfer station. Manufacturers are responsible for the transport of the collected materials and for their reuse or recycling. EPR programs are sometimes funded by a fee assessed when purchasing a new product. Others are funded directly by manufacturers. EPR laws have been successfully implemented for several consumer products, including mattresses (in California, Connecticut, and Rhode Island) and paint (in California, Colorado, Connecticut, Maine, Minnesota, Oregon, Rhode Island, and Vermont).

For more information about EPR and how it could be applied to carpet, visit the Product Stewardship Institute (PSI): www.productstewardship.us/?Carpet.

California's Carpet Stewardship Law

California is the only state with a law (AB 2398) relating to recycling post-consumer carpet. Established in 2011, the program was designed by carpet manufacturers and does not directly pay for the costs to collect, transport, and recycle carpet.

Consumers pay a small fee (\$0.20 per square yard in 2016) on the purchase of new carpet to fund grants to recycling processors to subsidize their costs. Carpet America Recovery Effort (CARE) runs the program which has resulted in a recycling rate of up to 14 percent, double the rate in rest of the country. However, in 2015, CalRecycle determined that the program does not meet AB 2398 goals, and CARE is in the process of redesigning the program. For more information, visit: www.calrecycle.ca.gov/carpet/program.htm



NORTHEAST WASTE MANAGEMENT OFFICIALS' ASSOCIATION

NEWMOA is a non-profit, non-partisan interstate association whose membership is composed of the state environmental agency directors of the hazardous waste, solid waste, waste site cleanup, and pollution prevention programs in Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont (www.newmoa.org).

This document was developed by NEWMOA with input from the following partners:

- Androscoggin Valley Council of Governments (AVCOG) in Maine
- Central Vermont Solid Waste Management District (CVSWMD) in Vermont
- Franklin County Solid Waste Management District (FCSWMD) in Massachusetts
- Maine Department of Environmental Protection (ME DEP)
- Massachusetts Department of Environmental Protection (MassDEP)
- Northeast Kingdom Waste Management District (NEKWMD) in Vermont
- Vermont Department of Environmental Conservation (VT DEC)

This document was developed as part of NEWMOA's "Promoting Strategies to Increase the Reuse and Recycling of Bulky Wastes in Rural Communities" project. The purpose of this initiative is to provide technical assistance to rural communities in the Northeast to help them implement more sustainable systems for reusing and recycling furniture, carpet, mattresses, and large rigid plastic items. For more information about this project visit: www.newmoa.org/solidwaste/projects/bulky.

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