

REUSING AND RECYCLING

MATTRESSES in Rural Communities

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

How Communities Can Facilitate Mattress Reuse & Recycling

- Include information on the town website of locations that accept mattresses and box springs for reuse and recycling
- Add a collection container or trailer at their transfer stations for recycling – some states offer grants that may help with the costs of processing and transportation
- Many schools host mattress fundraisers – help connect them with a charitable organization or mattress recycler that will collect the “old” mattresses if people purchase new ones from a school
- Host a community/regional collection event and invite a charity and recycler to participate

Old mattresses are difficult to handle and transport, and they can consume increasingly scarce landfill space. Disposing of mattresses is challenging for homeowners and expensive for local waste authorities, particularly in rural communities. Some of the mattresses that are 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 Mattress Problem

DID YOU KNOW?

- **Approximately 15-20 million mattresses and box-springs are disposed of each year in the U.S.** with each piece occupying approximately 40 cubic feet or more of landfill space.
- **Mattresses are hard to compact**, and the springs can easily catch in equipment used in landfill and incinerator operations. In response, some disposal facilities require the segregation of mattresses from other solid waste, resulting in increased management costs for many communities.

Benefits

Municipalities and tax payers benefit from reuse and recycling of mattresses 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 need mattresses but cannot afford to buy new ones

A traditional mattress consists of both natural and synthetic materials. The basic inner construction may include wire coils or springs, semi-rigid netting or wire mesh, and metal rings. The cushioning fabrics and quilted backing/coverings may be made out of natural fibers (e.g., cotton or wool), polyurethane foam,

polyester, or a combination. This is all held together by durable synthetic binding tape. The underlying box spring may be made out of wood or metal, and is also usually upholstered with a fabric covering. Approximately 80 to 90 percent of a traditional mattress and box spring can be recycled.

A foam mattress is made of either latex foam, polyurethane foam, or memory foam – these are much denser and, therefore, heavier than traditional mattresses so handling them may be more challenging. However, foam mattresses are entirely recyclable, and most mattress recyclers take all varieties.

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

Promoting Mattress Reuse Through Donations: The Wish Project

The Wish Project is a furniture bank located in Lowell, MA. It consists of a 15,000 square foot warehouse where they sort, process, and distribute furniture and home furnishings to low income clients, often referred by homeless shelters or other social service programs. The single most requested item is mattresses. This is because, although a family may only need one couch or kitchen table, they may need four or five beds.



The Wish Project often works with large donors, such as hotels and universities, because they have significant quantities of used mattresses in good condition. They also welcome donations from municipalities and the general public. Because these items are for reuse, they are specific about what donations they will accept. Mattresses must be in good condition with no stains, rips, or tears. The Wish Project heat treats all mattresses and upholstered furniture to ensure they are bed bug free.

There are several nearby communities that facilitate donations to The Wish Project. In most cases, the communities hold special collection events and rent a truck or trailer to transport collected items to the warehouse. For example, one nearby town once rented a vehicle to collect and transport furniture and mattresses to the warehouse. The Town of Ayer, Massachusetts has a permanent trailer that they use for this purpose. In special circumstances, The Wish Project has utilized its staff and heat-treatment trailer to facilitate a large pick up from a community.

For more information, visit: www.thewishproject.org.

A list of more than 80 additional furniture banks across the U.S. and Canada is available at www.furniturebanks.org/list-of-furniture-banks/.



Reuse

If the mattress or box spring is in good condition, reusing it is preferable. Even the most inexpensive new mattress costs hundreds of dollars, and some people can't afford them. So they need access to low cost or free mattresses and box springs. Many charities accept good condition items 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 mattress donations for re-sale or distribution. Households may also be able to donate or re-sell their used mattresses or box springs 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 mattresses and box springs need to be stored where they remain clean and dry until donation.

The biggest concern when selling or donating a mattress for reuse is the potential for spreading bed bugs or other unwanted pests. All mattresses need proper sterilization and sanitation treatment before they are distributed to the needy or offered for resale. Some programs utilize a heat-treatment trailer to collect and treat the mattresses before they are brought to the distribution facility.

Treatment options for bed bugs include:

- Pesticides (less preferred due to potential toxicity of the chemicals used)
- Heat treatment – all stages of bed bugs are killed at 113 degrees F
- Cold treatment or refrigeration – all stages of bed bugs are killed after 3 to 4 days in freezing temperatures
- Pressurized carbon dioxide (CO₂) treatment – all stages of bed bugs are killed as temperatures reach as low as -108 degrees F

Vacuuming and steam cleaning in addition to these methods offers more complete protection.

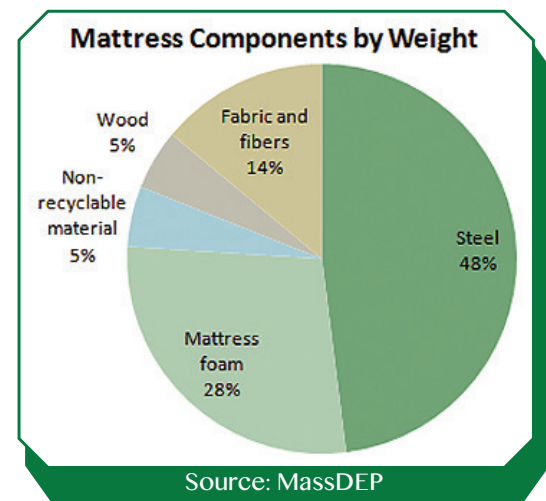
Educating households about local reuse options and helping them to make individual donations is important. Another option would be to host a community-wide event to collect a large amount of reusable mattresses for donation. The total cost of transporting mattresses to the donation organization depends upon the distance, but it may be less expensive than recycling or disposal costs, particularly because many landfills charge a fee for each mattress above their per-ton tipping fee. And unlike recycling or disposal, there is no charge for donating goods. In addition, the mattress' value and the transportation costs are tax deductible.

Recycle

Not all mattresses or box springs are suitable for reuse and those that have been reused eventually become worn and unusable. In other cases, unneeded mattresses have been stored improperly or are simply too old, torn, cracked, stained, or broken to be suitable for reuse. Before sending these "unusable" items to a landfill, the better option is to recycle them.

Many retailers, when delivering a new mattress or box spring, will take away the old ones. Sometimes they are sent for recycling, but often they are simply disposed of. Some stores include the cost for removal in the delivery charges, while others charge a fee for this service.

Communities can facilitate mattress and box spring recycling for their residents. There are private companies that charge a fee to accept mattresses and box springs and recycle them. Many also offer storage solutions for collection and transportation from a local site to the recycling facility. It is important that



mattresses and box springs are kept dry throughout storage and delivery to the recycler. Items that are severely damaged, wet or moldy, or otherwise contaminated may have to be disposed of because these problems can affect the recyclability of the materials. Small rural communities, who may be geographically dispersed, may incur relatively high storage and transportation costs due to the small volumes available for collection and the longer transport distances. These costs and the recycler's fee can add up quickly. A regional collection location can help alleviate these costs. Having more than one town participate in a collection and recycling program can reduce the costs for each municipality.

Most of the materials that make up the mattress and box spring can be recycled; however, disassembling them into their individual components requires labor and knowledge. Private recycling companies do this for a fee, but in some situations it might be easier for community solid waste programs to dismantle the mattress into its components and store and transport them for recycling and/or disposal, rather than managing the bulky item as whole. Communities can investigate having private recyclers train their transfer station staff and/or volunteers on how to safely and effectively dismantle mattresses and box springs.

Communities can also promote deconstruction to their residents. There are several do-it-yourself (DIY) videos on YouTube and other instructional guidance online. The estimated time for one person to dismantle a full sized mattress is a half hour, although it can vary greatly depending on the tools and equipment available, as well as the individual's expertise. A major benefit of deconstruction is the reduction in the item's size and its overall "bulk", which makes transportation easier. Through deconstruction residents may avoid the bulky waste disposal fee, and communities could increase the amount of material that is recycled.

Since the processing of mattresses for recycling involves the dismantling and removal of recyclable components, it is less likely that bed bugs would survive and pose a problem within the new product or material.

Mattress Pile – Disassembled



Mattress Deconstruction in Process



Mattress Recycling Facilities in the Northeast

Ace Mattress Recycling

Warwick, RI
www.acemattressrecycling.com

Conigliaro Industries / Nationwide Mattress Recycling

Framingham, MA
www.lrprecycling.com
www.conigliaro.com

Park City Green

Bridgeport, CT
<http://greenteambpt.com/park-city-green-mattress-recycling/>

Raw Material Recovery Corporation

Gardner, MA
www.rawmatrec.com

Recyc-Mattresses Corp.

East Hartford, CT
www.recyc-matelas.com

Rhode Island Resource Recovery Corporation

Johnston, RI
www.rirrc.org

UTEC Mattress Recycling

Lowell, MA
www.utec-mattress.org

Recently, the *Boston Globe* published an article highlighting Massachusetts' grant program to promote mattress recycling (see page 7 for more information).

They included a video of the mattress deconstruction process at UTEC Mattress Recycling in Lawrence, MA available at: <https://www.youtube.com/watch?v=TQmiDifjuP8>.

Profile of a Mattress Recycler in Massachusetts

Raw Material Recovery Corporation is located in Gardner, MA, which is a small city of approximately 20,000 people. The facility accepts all sorts of products for recycling, including mattresses and box springs, from commercial, residential, and municipal sources.

Typically a municipality will collect and store mattresses until they have a full container, and then bring them to the facility for recycling. Raw Material Recovery Corporation can also pick-up directly, but the transportation costs vary widely, based on location. Some municipalities choose to rent containers from the Corporation for a monthly fee. A 53-foot trailer stores approximately 150 mattresses, while a 20-foot storage container fits 40.

In 2015, Raw Material Recovery Corporation was awarded a state contract for mattress recycling. Through this program, participating towns recycle mattresses at the facility at the cost of \$13 per unit (as opposed to a \$18 per unit fee for the general public). Staff at the Raw Material Recovery Corporation visually inspect mattresses as they come in and store the collected mattresses onsite until they reach about 200-300 units. Then they start the process of dismantling. It typically takes 6-8 staff about 2-3 days to finish the process. They generally dismantle and recycle a few thousand mattresses per year.

The dismantling process is manual – staff separate the fabrics from the wood, steel, and foam and recycle each component separately. Any unusable part of the mattress is disposed of as solid waste. The prices for the separated raw materials fluctuate due to market demands. Once the materials are processed, they are shipped to the highest bidder, which could be located domestically (usually in the Southeast), or internationally (e.g., India, Hong Kong, China, or Pakistan).

For more information, visit: www.rawmatrec.com.



Preparing to Bale



Poly-urethane Foam



Cotton

Advertising Mattress Reuse & Recycling Activities

Municipalities can include information about mattress collections and recycling events in outreach and educational materials distributed to residents in a variety of ways:

- Include an insert in regular town mailings, such as tax bills, utility bills, and other communications about solid waste and household hazardous waste (HHW) management
- Distribute a flyer at HHW collection and/or other community events
- Place announcements in the local newspaper
- Put up posters on local community bulletin boards
- Provide contractors, realtors, and others with lists of local facilities that accept good quality mattresses and box springs for reuse or donation
- Post information on the town's website, Facebook page, and other social media platforms

Planning for Collecting Mattresses & Box Springs for Reuse & Recycling

CHALLENGE	POSSIBLE SOLUTION
Ensuring that mattresses are in good condition	<ul style="list-style-type: none"> Inform mattress owners about the needed condition of the mattresses heading for collection Visually inspect mattresses that are dropped off for unsanitary conditions Charge a drop-off fee and/or refuse collection of unsuitable mattresses (e.g., items that are severely damaged, wet or moldy, or otherwise contaminated)
Charging a drop-off fee might limit participation	<ul style="list-style-type: none"> Set the fee lower than the disposal drop-off or recycling fee that is normally charged for mattresses For donation events: emphasize that donations are tax-deductible
Finding staff and/or volunteers to organize and monitor collection to ensure mattresses are acceptable (and/or collect fee for drop-off)	<ul style="list-style-type: none"> Partner with local charities, nonprofits, or businesses that can provide volunteers Leverage resources by holding a one-day event in conjunction with a household hazardous waste (HHW) or solid waste collection event Site the collection location where a transfer station attendant can monitor activity
Finding a convenient location with storage capacity, such as a building, shed, or trailer where mattresses can be kept away from the elements until they are transported to a recycling facility or donation center	<ul style="list-style-type: none"> Utilize a local transfer station that has a storage shed or building where mattresses can remain clean and dry Rent a trailer or other collection container for temporary storage and transport If large enough storage is not available, mattresses could be dismantled by trained staff and separated by material For one-day collections: organize logistics so all items are removed at the end of the event
Transporting collected items to the donation or recycling facility	<ul style="list-style-type: none"> Charge a fee to residents to drop off mattresses to help offset the costs for transportation Several towns can collaborate on pick-ups to improve economies of scale and split costs Set up a landfill or a couple of transfer stations as drop-off points for a regional area Partner with large scale users of mattresses, such as hotels, health care facilities, and universities to time the collection so the community can “join” their shipment For donations: split the costs of transportation between the community and the partner organization that is receiving the items
Promoting the program	<ul style="list-style-type: none"> Include information in existing marketing campaigns for HHW, solid waste, or recycling – see sidebar on page 5 for examples

An Example of State Support for Municipal Mattress Collection

The Massachusetts Department of Environmental Protection (MassDEP)'s Sustainable Materials Recovery Program (SMRP) provides municipal grants to fund reuse and recycling activities for cities, towns, and regional entities. Under this program, MassDEP provides grants to communities that wish to implement a residential mattress recycling program. The purpose of their mattress recycling initiative is to increase the reuse and recycling of discarded mattresses and box springs from the residential waste stream.

Grantees collect the mattresses in a separate roll-off container or trailer which is then sent to one of three mattress recycling vendors contracted through MassDEP. In most cases, MassDEP provides the municipalities with either a rented collection container or the funds to purchase a new container. In some cases the municipality provides their own container. The costs for hauling and processing the mattresses are paid directly to the recycler by MassDEP.

The Town of Greenfield, located in Franklin County, MA is one of 48 municipalities that has received grant funding through this SMRP. Greenfield has a population of about 17,500 people. The transfer station is open certain hours Tuesday through Saturday and provides a convenient drop-off location for residents to properly dispose of items that are not collected curbside, including bulky items such as mattresses, construction and demolition material, and bulky rigid plastics. In 2015, the Town acquired a 53-foot trailer to collect and store mattresses for recycling under MassDEP's grant program. Greenfield allows residents of other communities in Franklin County to drop off mattresses and boxsprings for this program as well.

For more information, visit: www.mass.gov/eea/agencies/massdep/recycle/reduce/mattress-recycling.html.



Example of Mattress Trailer



Inside of a Mattress Collection Trailer

Extended Producer Responsibility

Extended produce 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 and its packaging. In 2016, three states have passed EPR laws for mattresses and implemented programs: California, Connecticut, and Rhode Island. In all three programs, consumers pay a fee at the point of purchase for any new mattress or box spring to finance the end-of-life recycling/disposal costs. The program works with municipal waste collection programs (curbside and transfer station drop-off) and retailers that take-back used mattresses to provide a system that collects, transports, and recycles mattresses. The program must be convenient for residents, and they cannot be charged a fee for using the service. Mattress manufacturers established the Mattress Recycling Council (MRC) to implement the programs.

For more information on EPR for mattresses, visit the Mattress Recycling Council at www.mattressrecyclingcouncil.org and their consumer outreach site: www.byebyemattress.com, and the Product Stewardship Institute (PSI) at www.productstewardship.us.

Mattress Recycling Program a Success in Connecticut

Connecticut was the first state in the U.S. to pass an EPR law covering mattresses and their statute was implemented in May 2015. The Mattress Recycling Council (MRC) administers the EPR program with input from the Connecticut Department of Energy and Environmental Protection (CT DEEP) and other stakeholders. Since the program started, Connecticut has recycled an average of 10,000 mattresses per month, compared to a fraction of that a few years ago and virtually none before 2010. More than 90 municipalities take advantage of the program, and this number continues to grow as the program gains traction. Participating municipalities are each saving thousands of dollars on avoided disposal costs. In addition, the mattress recycling program supports 40-50 private sector jobs in the State.

Some towns have been reluctant to join because of fears of bedbugs (participating towns have not found this to be an issue), and/or they do not have staff to handle the incoming mattresses. Space limitations at some transfer stations are also an issue. The CT DEEP notes that there have been some minor performance issues at the recyclers, such as storing in excess of their permit. Additional recycling facilities and their increased competition could help to resolve these issues.

For more information on Connecticut's EPR program, and links to additional resources, visit: www.ct.gov/deep/mattressrecycling.



Mattress Pile



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. More information about this project is available at: www.newmoa.org/solidwaste/projects/bulky.

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