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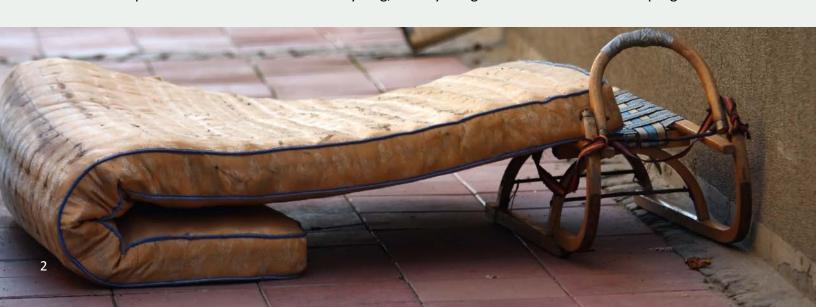
WHAT IS MATTRESS STEWARDSHIP?

More than 50,000 mattresses are discarded each day in the U.S., equating to about 15 to 20 million disposed annually. Much of this bulky, cumbersome waste ends up in the nation's landfills and imposes significant costs on local governments for its management. Less than five percent of mattresses are recycled annually, despite the fact that up to 90 percent of mattress components are recyclable. Reusing and recycling, rather than landfilling, unwanted mattresses can:

- Reduce reliance on disposal;
- Recover valuable materials to make other products (including steel, carpet pad, animal bedding, mulch, new textiles, and fibers);
- Create recycling jobs;
- Reduce waste management costs for governments;
- Reduce the need for virgin materials to be extracted; and
- Reduce greenhouse gas emissions and energy use by decreasing the energy-intensive production of new mattresses.

State and local governments, mattress recyclers, and other stakeholders in the mattress life cycle need to work together to develop more effective ways of managing discarded mattresses. Mattress stewardship is a way to minimize the health, safety, and environmental impacts of mattresses from manufacturing through end-of-life, while also maximizing economic benefits. Mattress manufacturers have the greatest ability to increase sustainable production and recycling, but other stakeholders, such as suppliers, retailers, and consumers, also play a role. Mattress stewardship can be either voluntary or required by law.

Extended producer responsibility (EPR) is a mandatory type of product stewardship that includes, at a minimum, the requirement that the manufacturer's responsibility for its product extends to managing that product at end-of-life, including both financial and management responsibility. EPR laws have the capacity to spur substantial increases in recycling rates, particularly when legislation includes performance goals and/or collection site convenience metrics. However, even in the absence of EPR laws, there are non-regulatory (e.g., market development) and regulatory actions (e.g., disposal bans) that can be taken to both improve mattress collection and recycling, and lay the groundwork for future EPR programs.









WHY DO YOU NEED THIS GUIDE?

This HOW-TO GUIDE has been written to provide fundamental guidance and map out best practice strategies for setting up effective mattress stewardship programs. Its primary audience is state and local governments who play a role in setting policies, purchasing mattresses and related services (e.g., for state educational institutions and for hotel guests), and collecting discarded mattresses. This guide outlines several actions that government representatives can take to advance mattress stewardship, whether through legislated or voluntary programs.

This document will also be valuable for other stakeholders involved in the life cycle of mattresses, such as manufacturers, consumers, retailers, universities and colleges, hotels, healthcare facilities, transporters, mattress processors/recyclers, and environmental groups. Like government officials, these other stakeholders also have a responsibility — and with EPR laws, a legal obligation — to reduce the burden of discarded mattresses on the communities they serve and live in.

The purpose of this document is to provide tools that can:

- Lay the groundwork for EPR legislation for mattresses;
- Detail the components and benefits of an effective EPR program; and
- Provide insights into the challenges, potential solutions and important considerations in mattress stewardship, even in the absence of a legislated EPR program.

This guide will also specifically provide information on how to spread awareness of the problem posed by discarded mattresses, improve the recyclability of recovered mattresses, and develop solutions to increase mattress recovery. It also includes suggestions to address the unique challenges of rural communities. To assist government officials and others to increase mattress recycling, the guide dives into the following HOW-TOs:

- HOW-TO Ramp Up Outreach and Education
- HOW-TO Establish Best Practice Collection and Storage
- HOW-TO Foster Markets that Care about Mattress Stewardship
- HOW-TO Meet the Challenges that Stewardship Programs Face in Rural Areas
- HOW-TO Understand the Effects of EPR Laws on Your Programs

For more information on advancing mattress stewardship, see the PowerPoint presentation and audio recording from PSI's webinar on *Carpet & Mattress Stewardship in Rural Areas*, or visit the *mattress stewardship page* on PSI's website.

HOW-TO #1: Ramping up Outreach

KEY MESSAGES:

Outreach and education are essential components of any mattress stewardship effort because they provide the means to communicate the importance of recycling discarded mattresses and supply key information on where and how to recycle. Educational efforts also increase awareness and use of best practices in collection, storage, and handling to maintain the quality and condition of discarded mattresses for recyclability and reuse. Outreach and education should to be targeted toward residents, municipalities, retailers, universities and colleges, hotels, healthcare facilities, trade associations, transporters, processors/ recyclers, and regulators. Each of these groups is important because of their role in generating and handling discarded mattresses, as well as in communicating with key stakeholders as the material makes its way from removal to collection to processing and recycling. To the right, you will find key messages that officials must communicate and suggested ways to get the word out.



KEY MESSAGE: Mattresses need to be recycled.

Unlike bottles, cans or plastic, mattresses are not an item that people recycle every day or even every year. A significant challenge, therefore, is simply trying to get the public to consider what happens to their mattress after they discard it. Mattresses are bulky and take up significant space in landfills. They are also relatively less dense than other solid waste, yet are large in volume. Thus, the landfill tipping fees and waste-to-energy (WTE) facility fees, typically charged by weight, will also be less for mattresses than other wastes. As a result, some landfill and WTE operators have refused to accept these items. Thus, one of government's challenges is to get those who generate used mattresses to recognize mattresses as an item that can be, and should be, recycled.

KEY MESSAGE: There are recommended ways to collect, store, and handle mattresses so that they are suitable to recycle.

While recyclers know how mattresses must be stored and handled to make recycling an option, many used mattress generators may not. For mattress stewardship programs to be successful, it is important to publicize best practice methods of removal, collection, storage, and handling to private residents as well as to major commercial and institutional mattress purchasers, such as hotels, universities and colleges, and healthcare facilities.

Emphasis should be placed on the need to keep mattresses clean and dry, especially those that originate from locations that generate significant volumes of used mattresses (e.g., retailers, universities and colleges, hotels, and healthcare facilities).

KEY MESSAGE: There are convenient ways to get used mattresses into recycling streams.

A significant challenge in any recycling program is educating the public about where and how to bring products in for recycling, or whether collection options are available. With mattresses, this is particularly significant because of the bulky nature of the product and the inconvenience recycling poses to most discarded mattress generators.

& Education

RECOMMENDED STRATEGIES:

STRATEGY: Don't Go it Alone—Collaborate

Each stakeholder group along the mattress life cycle brings a different perspective to the task of recycling mattresses. From the outset of any initiative to create and run a mattress stewardship program, efforts should be made to collaborate with these groups. Collaborative outreach creates a basis for future communication between stakeholder groups, and may highlight new opportunities to improve collection infrastructure, determine markets for materials, and provide recycling services.

Options to consider:

- Develop education and outreach materials in collaboration with retailers, universities and colleges, hotels, healthcare facilities, trade associations, manufacturers, recyclers, and regulators.
- Use these stakeholders' websites and newsletters to reach out to their members and networks.
- Suggest mattress stewardship or mattress recycling as possible topics for any public service announcement programs run by stakeholders.
- Seek out opportunities for coordination and collaboration on education and promotion with other stewardship programs in your community or state (e.g., paint or carpet) and mattress recovery efforts in other communities or states. This can include sharing lessons learned and best practices, and cross-promoting stewardship efforts.

STRATEGY: Innovate—Use a Variety of Media

Reach out to a wide range of audiences on an ongoing basis by relying on diverse media in education and outreach initiatives, including targeted emails, mobile texting, website content, news media, social media, events, and printed materials that can be distributed during in-person meetings, trade shows, and waste collection events. Trade press and trade shows may be a particularly valuable way to reach building owners, retailers, universities and colleges, hotels, and healthcare facilities. Take advantage of environmental fairs or events as well as planning an annual effort around Earth Day when media will be open to doing recycling stories.

STRATEGY: Don't Re-Invent the Wheel—Create Outreach Materials with Other Mattress Recycling Groups

Work to create regional umbrella groups that can produce and share expenses for educational and outreach campaigns. This will be especially helpful for smaller local government agencies, but is an efficient approach for any organization. Pooling resources can increase the efficiency and reach of each initiative; for example, communities might collaborate to write one version of best practices guidance for collection and storage that can be easily customized and used by several communities.

STRATEGY: Connect with Local Environmental Groups

Many environmental groups readily support recycling programs, and will stand behind legitimate efforts to increase mattress recycling. Reach out to them to endorse and promote your efforts.



HOW-TO #2: Establishing Best Pro

RECOMMENDED STRATEGIES:

Approaches to collection and storage are critical to the recycling and reuse of discarded mattresses. Convenient collection makes it more likely that used mattress generators will deliver discarded materials to appropriate locations rather than resort to illegal dumping or bulk waste pickup for landfilling. However, it is not just getting discarded mattresses to collection sites or recyclers that is important. For programs to successfully increase recycling, those involved must also ensure that mattresses do not become wet or dirty during the collection process, as this can make materials unsuitable for reuse or recycling.

To be successful, mattress stewardship programs must work to provide multiple collection sites that are convenient in terms of both location and hours of operation. They must also work to maintain relationships with recyclers and recycling centers to ensure reliable service for their areas of operation.



STRATEGY: Develop New Collection Systems

Evaluate strengths and weaknesses of any existing collection systems, and consider new opportunities. Work with retailers, distributors, and consumers (especially large scale purchasers such as universities, health care facilities, and hotels) to explore the opportunities and challenges of "reverse distribution" systems, which use the same infrastructure to return used mattresses to the original manufacturer or seller. Retailers, in particular, are well positioned to provide collection services, and state and local governments can work to foster the development of this mode of collection through pilot programs, policy statements, and regulatory requirements.

The key to collection is making it convenient. Convenience almost always necessitates having more than one site, and for sites to be open multiple days and at a variety of times. Encourage development of convenient collection sites, such as local solid waste facilities and/or retailers. Providing multiple channels for discarded mattresses, including permanent drop-off sites, retail take-back, one-day collection events, and even curbside collection—if clear instructions are provided to protect the mattress quality—may further increase access to recycling outlets and the supply of usable discarded mattresses.

STRATEGY: Educate on the Reasons Why Mattress Quality Has to Be Preserved

To increase the flow of material suitable for recycling and reuse, collectors must provide discarded mattresses to processors in a condition suitable for recycling. Therefore, one of the first steps mattress stewardship programs should take is learning the product specifications for used mattresses of all nearby recycling facilities. This information also needs to be disseminated to generators as part of initial education and outreach efforts. Those involved with mattress stewardship programs should also make an effort to become familiar with multiple recycling markets and facilities nearby, in the event that a nearby facility closes unexpectedly or can no longer accept material.

STRATEGY: Select Best Practices for Collection & Storage

Effective collection and storage systems can increase mattress recovery and ensure worker safety. Introduce facility policies,

actice Collection & Storage





employee training protocols, and signage that promote the following best practices:

- Segregate used mattresses from other materials.
 This will make the process more efficient and prevent cross-contamination of materials. Once segregated, mattresses can then be separated into three streams:
 - Mattresses in very good condition that could be reused (see key information on protection from bed bugs below);
 - Mattresses that could be recycled; and
 - Mattresses that are severely damaged, wet, twisted, soiled or contaminated.
- Pack mattresses efficiently in a collection container to maximize container capacity. The efficiency of mattress placement in a container can affect transportation costs, particularly critical for rural communities, as well as processor off-loading/ handling costs.
- 3. Store materials under cover and off the ground to prevent contamination and damage from water or dirt. If storage is outdoors, use closed containers to mitigate issues of storm-water runoff, fire hazards, and mold, and limit storage time to prevent product degradation, reduce water contamination, and avoid odors and mold.
- 4. Provide a secure site for the collection container.
- 5. Follow best practices to protect workers and prevent the spread of bed bugs. Although bed bugs do not transmit diseases, they can cause sores, discomfort, stress, and allergic reactions. Requiring used mattress generators to sleeve mattresses in plastic may reduce employee exposure during collection. Requiring generators to "self-load" mattresses into the collection container can also protect collection site workers. This is particularly important for mattress reuse and refurbishment: refer to state specific quality guidelines to ensure the protection of workers and end-users. For further information see the Best Practices for Bed Bug Management of Mattresses, Bedding, and Upholstered Furniture: Guidance Document for the Reuse/Resale and Recycling Industries in

- Connecticut, CT Coalition Against Bed Bugs website, and the U.S. Environmental Protection Agency's Bed Bugs webpage.
- 6. Develop a contingency plan for instances when it is necessary to store more material than is typical at the collection site.

STRATEGY: Pay Attention to Details in Contracts with Transporters and Processors

It is important to consider specific elements of contracts with transporters and processors who take material from your collection site to ensure that discarded mattresses:

- · Will be accepted for recycling;
- Are being managed appropriately by contractors; and
- · Are recycled to the greatest extent possible.

Learn the requirements of potential transporters and processors. These can affect procedures at your site. For instance, do they accept mattress pads or pillows? Are mattresses required to be sleeved in plastic? What happens if bed bugs are found? What are the requirements for documentation?

Include provisions in your contracts with haulers and processors who remove and process used mattresses from your site that:

- Certify that material will be recycled to the greatest extent possible;
- Ensure transporters and processing facilities are in compliance with all legal requirements;
- Ensure that a manifest system is in place with return documentation to be sent to you as the collector;
- Provide for periodic reporting and access to facility and include inspection protocols;
- Allow for changes in the contract over time due to such circumstances as market fluctuations; and
- Help incorporate haulers in the customer education and outreach process.

For further details on contracts, see the *Joint Advisory on Designing Contracts for Processing of Municipal Recyclables* developed by the Solid Waste Association of North America, and the National Waste and Recycling Association.

HOW-TO #3: Fostering Markets the

RECOMMENDED STRATEGIES:

Expanding mattress recycling markets requires a sense of the process from collection to recycling, and knowledge of the potential end products made from recycled mattresses. Mattresses and box springs are composed primarily of wood, metal, textiles, foam, cotton, and other fibers. Collection, handling, and processing costs generally exceed the market value of reclaimed material. Metal can be recycled and is the highest value material that comes out of the mattress. However, it can be difficult to deconstruct pocket coil mattresses or separate metal from wood to access this material. Metal recovered from mattresses can be used to make springs for new mattresses and box springs, among other products. Wood can be used as mulch, animal bedding, or burned at waste-to-energy plants. Cotton and foam can be used for insulation carpet padding and filtering oil in diesel engines. However, markets for cotton and some fibers tend to be harder to locate.

The market for mattress reuse and recycling is often based on where different types of processing facilities are located. Taking action to foster, maintain, and enhance markets for discarded mattresses is key to advancing mattress stewardship.

STRATEGY: Take Action to Directly Encourage Market Development

- Revisit contract provisions for procurement and services, and implement procurement requirements that encourage use of post-consumer mattress content materials in procurement and service contracts.
 - Require, in contracts, that new mattresses have post-consumer recycled content, are readily recyclable, and manufacturers or suppliers will reclaim the product after its use.
 - Develop standards and specifications that advance environmentally preferable purchasing.
 The U.S. Environmental Protection Agency site has information on voluntary standards and guidelines for environmentally preferable purchasing of mattresses.
 - Encourage mattress manufacturers to use postconsumer mattress content in their own products.
 A bill introduced in 2015 in Illinois (HB 1429) provides an example of legislative language requiring procurement of recycled materials.
- Provide grant funding for market development at the state and local level. Although sustainable program funding for market development should come from manufacturers, a government agency can jump start mattress recycling by providing grant funding to stimulate initial market development. One resource for potential grantees is the *Cascade Alliance*, which provides free consulting services to non-profit organizations to help them develop businesses that use items diverted from the waste stream (such as mattresses) as a resource for meeting a non-profit's mission.



at Care About Mattress Stewardship

STRATEGY: Adopt Policies and Undertake Projects to Encourage Recycling

Possibilities include:

- Identify, assess, and select potential markets for mattress recycling.
- Ban disposal of all used mattresses in landfills or at waste-to-energy facilities, and make mattress recycling mandatory. (For general disposal ban examples, see Seattle Ordinance 124076; Connecticut Department of Energy and Environmental Protection Designated Recycling Regulation, Section 22a-24lb; Massachusetts Department of Environmental Protection Regulations 310 CMR 19.017; Minnesota Statutes 115A.945). Bans and recycling mandates must recognize the need to have a plan and infrastructure in place. For example, a two-year implementation time frame might be provided after a ban is enacted to allow time for investment in collection and processing infrastructure. In addition, bans or recycling mandates must consider key related issues such as lack of markets for certain materials (e.g., recovered cotton and some fibers).
- Require those that illegally dump mattresses to pay for cleanup.
- Require retailers and haulers to report on collection activity (e.g., the number of mattresses collected, recycled, and otherwise disposed).
- Provide financial incentives (e.g., a payment or tax rebate) to those recovering used mattresses.
- Require the purchase of recycled content products, including mattress-derived products, to better ensure there are outlets for processed mattress materials.



- For haulers (those transporting to a transfer station or landfill), see the Solid Waste Association of North America and National Waste and Recycling Association's *Joint Advisory on Designing Contracts for Processing of Municipal Recyclables* for options on requirements (e.g., reduced fee on source separated recyclables, diversion plan, specify materials that must be recycled).
- For retailers, hotels, and educational institutions that serve public agencies, require used mattresses to be recycled to the greatest extent possible, and that these entities support market development for recycled-content products through their procurement policies.
- STRATEGY: Identify and Evaluate Funding Needs and Options, Including Economics of Recycling versus Disposal, and EPR
- STRATEGY: Establish a Statewide Group with Key Stakeholders that Meet Regularly on the Issue of Mattress Stewardship and Market Development



HOW-TO #4: Meeting the Challenges the

RECOMMENDED STRATEGIES:

While mattress stewardship can face hurdles in any jurisdiction, rural communities face unique challenges. Rural communities tend to be more geographically dispersed, with smaller populations than urban communities. This means that rural collection and transportation costs will typically run higher than in more densely populated areas due to smaller volumes available for collection and longer transport distances. In some cases, it may take many months to collect enough material to justify the need for transportation to a processor. As a result, it is less costeffective for recyclers and transporters, and they may be less inclined to provide services needed for recycling.



STRATEGY: In Numbers and Collaboration, There is Strength—and Economy

In almost all aspects of running a mattress stewardship program, rural areas can benefit from collaboration with other rural areas facing similar hurdles. Work closely with service providers and surrounding communities to establish collection sites and increase economies of scale in collection and transportation to a processor. Identify landfills or transfer stations that can serve as consolidation points for a regional area. By doing so, rural communities can share costs and pool their collections to make pickups by recyclers more economical. Costs can also be shared for other activities, such as education and outreach. Larger, consolidated operations also bring with them the potential for more jobs and more capacity to seek out grant support.

STRATEGY: Commit to Best Practices for Storage

Rural local governments should find a way to store discarded mattresses until they have a large enough volume to make it worth the cost of transportation. This may require storing materials for a significant length of time. Following collection and storage best practices is, therefore, particularly important in maintaining the quality of materials so that they are acceptable for recycling.

For more information on mattress stewardship in rural areas, see the PowerPoint presentation and audio recording from PSI's webinar on *Carpet & Mattress Stewardship in Rural Areas*.

STRATEGY: Try it Out

In general, rural local governments can use pilot projects to figure out which collection and storage methods will work best in their communities, including implementing retail collection sites or establishing transfer station "hubs" to service multiple communities.



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HOW-TO #5: Understanding the Ef

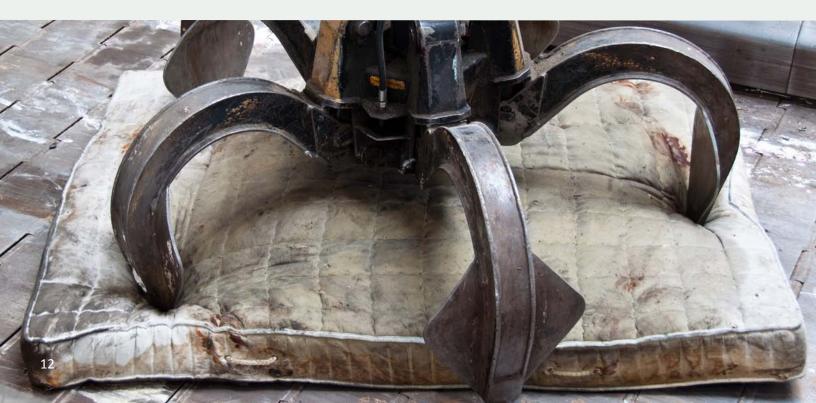
Under the leadership of *PSI's National Mattress Stewardship Initiative*, Connecticut became the first state to pass EPR legislation for mattresses in 2013. Implemented in May 2015, the law established a *manufacturer-funded stewardship program* in line with model EPR legislation crafted by PSI and National Initiative stakeholders. Consumers pay a fee, collected by retailers, on the purchase of a new mattress or box spring (currently \$9 per unit) to fund program activities including transportation and recycling costs.

In 2013, California and Rhode Island also passed EPR laws for mattresses, based on the same general model developed by PSI and Connecticut stakeholders. On July 1, 2015, the Mattress Recycling Council (MRC), a non-profit organization formed by the industry to operate recycling programs in states with mattress recycling laws, submitted plans for review to the California Department of Resources Recycling and Recovery (CalRecycle) and the Rhode Island Resource Recovery Corporation (RIRRC) to develop and implement statewide mattress recycling programs. The current deadline for both states to approve the plans is in the fall of 2015, with program implementation expected to begin in early 2016.

Further description of elements of an EPR bill for mattresses and additional mattress stewardship resources, including PSI's "Outline for Mattress Stewardship Bill", the "2011 Mattress Stewardship Briefing Document" and PSI's "National Mattress Stewardship Meeting Summary" from PSI's mattress stakeholder dialogue meeting are available *on PSI's website*.

Key Differences between a Model EPR Program and Voluntary Programs

The following table is a comparison between a model EPR program and voluntary programs. The information listed for the model EPR program provides a concise view of certain key elements of EPR legislation that, together, aim to most closely meet the fundamental *principles of EPR*. Existing EPR laws for different products meet this model to varying degrees.



Fects of EPR Laws on Your Programs

	Model EPR Program	Voluntary Programs
Financing of End-of-Life Product Management	 Manufacturers pay for collection containers, transportation to processors, and recycling and disposal costs. To fund programs, manufacturers charge an "eco-fee" at retail, for consumer purchase of a new product; or incorporate a charge into the product price (cost internalization). 	Product generators (e.g., residents, contractors, etc.), and/or state/local governments typically pay for the cost of collection, transportation, processing, recycling, and disposal.
Program Management	 As a condition of sale, manufacturers are responsible for managing programs to recycle and dispose of their products at end-of-life. 	 State and local governments, non-government generators, and industry voluntary programs (when available) are typically responsible for end-of-life product management.
Education and Outreach for Collection and Recycling Programs	 Manufacturers are responsible for paying for and implementing education and outreach programs. 	State and local governments, and industry voluntary programs (when available) typically provide education and outreach.
Collection/ Processing Infrastructure	 Consumers have convenient access to collection opportunities free of charge. Programs often integrate existing collection and processing infrastructure with new facilities responding to new opportunity. 	Consumers often do not have convenient access to collection sites, and at times pay a fee at the collection site.
Resource Conservation Hierarchy	 Manufacturer-managed programs must follow the resource conservation hierarchy of reduce, reuse, recycle, and beneficial use, to the extent economically practical and technically feasible. 	 Greater reliance on disposal in landfills and at waste-to-energy facilities due to economics that favor these options over higher and better uses such as reuse or recycling.
Performance	 Manufacturers are responsible for achieving performance goals (e.g., state-wide convenient access to collection sites, recycling standards) established or approved by government. 	Requirements for collection convenience or recycling goals may or may not exist.

EPR legislation is often more effective than voluntary initiatives in terms of:

- Reducing reliance on disposal in landfills and at waste-to-energy facilities.
- Reducing dependence on fossil fuels.
- Accelerating the creation of recycling jobs.
- Expanding opportunities for mattress collection and recycling. EPR contributes to mattress recycling infrastructure by incentivizing the following:
 - Development of infrastructure to increase collection, reuse, and recycling. Under EPR
 legislation, manufacturers are often required to meet standards for convenience and/or
 collection volumes. To meet these goals, it is often necessary for manufacturers to expand
 collection infrastructure.
 - Market growth of new products made with recycled content. EPR guarantees a larger and more continuous flow of materials for recycling than disposal in landfills or at waste-toenergy facilities, which creates new opportunities for recycling market growth.







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