

Evaluation of Connecticut's Mattress Stewardship Program

Connecticut Department of Energy and Environmental Protection



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Definitions (these definitions are only as related to this report)

- ◆ **Bulky Waste** is a subset of municipal solid waste which typically includes items too large to fit into a standard curbside garbage receptacle such as furniture, construction and demolition debris or mattresses.
- ◆ **Commodities** are the streams created by the processing of a mattress that are then sold to brokers or manufacturers such as cotton, steel, foam or wood.
- ◆ **Curbside Collection** means the collection of a mattress at the residence as opposed to the resident dropping off the mattress at a specified location.
- ◆ **Eco Fee** means the fee charged to a customer on the purchase of a mattress which is used to fund the recycling program.
- ◆ **Extended Producer Responsibility (EPR)** is a policy where the manufacturer of a product assumes primary responsibility for designing and operating an end-of-life management program for that product.
- ◆ **Generator** is a person who discards a mattress whether at a residence, hotel, hospital, college or university or others designated by the law.
- ◆ **Hauler** means a company that picks up and transports discarded mattresses from generators.
- ◆ **Mattress Processor** is a company that dismantles and recycles discarded mattresses under this program.
- ◆ **Mattress Recovery** refers to mattresses accepted into the program regardless of whether they were wholly or partially recycled.
- ◆ **Mattress Recycling** refers to the act of physically deconstructing a mattress and separating components for recycling into new products.
- ◆ **Mattress Recycling Council (MRC)** means the organization consisting of obligated mattress manufacturers responsible for establishing and implementing the provisions of the mattress stewardship law.
- ◆ **Municipal Solid Waste (MSW)** means the materials discarded by municipal residents.
- ◆ **Stewardship Plan** means the plan submitted by the MRC and approved by the department for implementation of the requirements established in the law.
- ◆ **Stewardship Program** means the program employed to implement the approved stewardship plan.
- ◆ **Transfer Station** is an intermediate location for accepting and aggregating waste including MSW and mattresses for transportation to a processing facility MSW, including mattresses, for transportation to a processing facility.
- ◆ **Unit** means a singular mattress or box spring accepted under the program.
- ◆ **Volume Reduction Facility (VRF)** means a facility that accepts bulky waste and processes it before sending it off for marketing, further processing or disposal.
- ◆ **Waste-to-energy Facility (WTE)** means a facility that accepts MSW and other wastes, incinerates these wastes and recovers the energy value from that process.

Contents

Executive Summary	4
Program Summary	6
Statutory Charge.....	6
Program History.....	6
Program Description.....	6
Program Evaluation	8
Municipal Convenience and Accessibility.....	8
Recovery from Non-residential Generators.....	9
Recovery Rate.....	12
Processors' Performance.....	13
Eco Fee.....	14
Program Design.....	14
Recycled Content in New Mattresses.....	16
Review of Impact on Mattress Sales in Connecticut Border Towns.....	16
Program Goals	17
Goal for the Number of Discarded Mattresses Managed Under the Program.....	17
Goal for the Number of Mattresses Recycled.....	20
Conclusion	21



Executive Summary

In 2013, Connecticut became the first state in the country to enact legislation requiring mattress manufacturers to accept responsibility for managing their product at the end of life. Mattress manufacturers formed a stewardship organization, the Mattress Recycling Council (MRC) in 2014 and submitted a plan for recycling mattresses in compliance with the law. The Department of Energy and Environmental Protection (“DEEP” or “department”) approved the plan on December 31, 2014, and the first mattresses were collected through the program in May of 2015.

The program services not only residentially generated mattresses but also hotels, schools and universities, hospitals, retailers, and volume reduction facilities. Most mattresses accepted by the program come from residents dropping off their mattresses at a transfer station, but a growing number are being collected from retailers. After seven years of operation, there is enough data and program information to conduct an evaluation. To build on the program’s overall success, DEEP suggests several recommendations to increase the number of units recovered, address market limitations and make the program more economically equitable. These recommendations include:

- ◆ ***Increase accessibility and convenience in our larger cities.***

Hartford collects mattresses curbside and on average picks up 1,000 units per month. New Haven only accepts mattresses through drop off at their transfer station and averages 100 units per month.

- ◆ ***Make the eco fee more equitable by assessing it based on the retail price of the mattress.***

The eco fee is assessed on each unit regardless of price or size. Therefore, the fee on a discount twin mattress that retails for less than \$100 is the same as the luxury king mattresses which can sell for \$4,000 or more. This is a burden for lower income families.

◆ **Increase curbside recycling of mattresses.**

Collecting mattresses at the curbside is the most convenient way for homeowners. Manchester offers curbside collection and accepts significantly more units than West Hartford, a municipality of similar size that does not offer separate curbside collection.

◆ **Work with neighboring states to promote regional administration of mattress EPR laws.**

Both Massachusetts and New York have introduced mattress EPR bills. If they were to pass, the scale of mattresses in the program could incentivize investment which could lower per unit costs.

◆ **MRC should manage mattresses that are not recyclable.**

The law requires the manufacturers to establish a full stewardship program. The MRC has established a recycling program where they manage mattresses that can be recovered, but municipalities are still paying for the disposal of mattresses deemed not to be recyclable due to their condition.

The program has achieved steady growth. There were 210,000 units collected in 2021 which is the highest total of any year. The significant increase from previous years may have been related to the COVID-19 pandemic. We have taken that into account when establishing collection goals. Based on current collection and the amount recoverable from municipalities that are not participating in the program or have room to grow through curbside collection, DEEP believes a reasonable goal for annual collection is 250,000 units per year. There are several variables that can affect that goal including a movement in the industry to sell mattresses without box spring foundations.

There are some challenges in finding markets for certain commodities including the wood typically found in box springs and the material used in pocket coils. Changes in technology could impact markets as well. The mattresses manufacturers are beginning to include consideration of end-of-life deconstruction in the design and manufacturer of new mattresses.

Since the program began in 2015:



Over 1.2 million mattresses have been recycled



Over 140 towns participate in the program



Municipalities have realized over \$12 million in avoided disposal costs

Program Summary

Statutory Charge

Section 22a-905c of the Connecticut General Statutes (CGS), requires the Commissioner of the Department of Energy and Environmental Protection (“DEEP” or “department”) to submit a report to the environment committee providing an evaluation of the Connecticut mattress stewardship program (program). The report is required to “provide an evaluation of the mattress stewardship program, establish a goal for the number of discarded mattresses managed under the program and a separate goal for the recycling of such mattresses, taking into consideration technical and economic feasibilities.”

Program History

Connecticut passed the nation’s first mattress stewardship law in 2013. Passage of the law was driven by the high costs associated with managing discarded mattresses and the desire to keep them out of landfills and waste-to-energy facilities, among other factors. Under the law, mattress manufacturers were required to establish a stewardship program for discarded mattresses from defined generators, such as municipalities, hotels, hospitals, universities, and more. Mattress manufacturers formed a stewardship organization, the Mattress Recycling Council (MRC), which submitted a program plan to the department in 2014 describing how the stewardship organization would develop and implement a stewardship program in accordance with the law. The department approved the mattress stewardship program plan on December 31, 2014, and MRC began implementing the plan on May 1, 2015.

Program Description

Municipalities – the largest generator of discarded mattresses through collection of municipal solid waste (MSW) – are not required to participate in the program, but most have opted to do so. As of July 2022, the MRC program has 122 municipal drop sites serving 136 Connecticut municipalities and another 12 municipalities hosting one day events annually or biannually.¹ Over 1.2 million units have been recycled through 2021.²

The program has historically been financed by a \$9 eco fee assessed on each mattress and box spring at the point of sale. The eco fee was raised to \$11.75 on January 1, 2021. Eco fee revenue is held and managed by MRC and funds the collection, transportation, and processing of mattresses managed under the program. Mattresses collected through the program are currently processed by two facilities: Park City Green in Bridgeport and Willimantic Waste in Willimantic. Park City Green serves western and southern Connecticut while Willimantic Waste serves northern and eastern Connecticut. Materials recovered for recycling from these facilities include foam, cotton, metal, and wood.

¹ Email from MRC to DEEP July 1, 2022.

² MRC annual report 2021.

This program has been tremendously successful and has yielded significant benefits to Connecticut's municipalities and the environment. Prior to the law's enactment, only a small number of mattresses were recycled in Connecticut at Park City Green. Mattresses are expensive to manage as a bulky waste due to the size and relatively light weight. Coil springs can become tangled in machinery. Mattress components have value when recycled. Barriers to profitability in mattress recycling have included the costs of collection, transportation, and processing. Mattress deconstruction has always been small scale and labor intensive.

With seven years of experience, we can evaluate the program, update the goals, and identify areas for improvement. While the program has been unquestionably successful, there are some issues that warrant consideration. Specifically:

1. There is less convenient access in New Haven, Bridgeport, Waterbury, and Stamford.
2. The flat eco fee levied on all mattresses means that lower income residents that buy lower cost mattresses are in effect subsidizing the higher income residents that buy more expensive mattresses. This phenomenon is more pronounced considering that many residents in lower income communities have less convenient access to mattress recycling options. The program should consider assessing eco fees based on the retail price of the mattress.
3. The program needs to develop a plan to collect mattresses at the curbside from towns that use curbside as a primary method for discarding a mattress.
4. Capital improvements for the two processors are needed to help lower processing costs.
5. Data on the percent of units discarded compared to purchased is needed to better understand how many units are available for recycling.
6. As fewer box springs are sold as consumers move to newer technologies, revenues are predicted to decrease.
7. Connecticut needs to monitor potential illegal dumping of mattresses coming from Massachusetts which has implemented a disposal ban for mattresses instead of EPR.
8. Current state consumer protection laws may inadvertently restrict the use of some commodities recovered from discarded mattresses in the manufacture of new mattresses.
9. MRC should support the state's administrative needs. MRC pays administrative fees in Oregon, the fourth state to pass the mattress EPR laws but is not required to pay administrative fees in Connecticut.

Any improvements to the program should focus on the economics of the program. By creating greater scale and value of the commodities, the program can better implement suggested improvements, such as greater convenience, without having to raise the fee at the point of sale.

Program Evaluation

The Connecticut mattress stewardship program was the first in the nation and one of the first in the world. Rhode Island and California implemented EPR programs for mattresses shortly after Connecticut. Oregon passed a mattress EPR law in 2022. The initial program goals included building program awareness, recruiting participants, and understanding and correcting program deficiencies. Based upon the lessons learned in the first years of the program, the department provides this evaluation of the program using the following criteria:

- a. Municipal Convenience and Accessibility
- b. Recovery from Non-residential Generators
- c. Recovery Rate
- d. Processors' Performance
- e. Eco Fee
- f. Program Design
- g. Review of Impact on Mattress Sales in Connecticut Border Towns

Municipal Convenience and Accessibility

Every consumer who purchases a mattress pays the program's eco fee at the point of sale. Thus, it is important that each Connecticut resident have reasonably convenient access to program participation. MRC indicated there are 122 municipal collection points (transfer stations) serving 136 Connecticut municipalities, with 12 more towns conducting annual or biannual collection events.³ This represents a high degree of convenience and accessibility for residents that utilize a transfer station to dispose of a mattress. Residents can also bring mattresses directly to one of the two recycling facilities located in Willimantic and Bridgeport. Despite the number of locations and events, 31% of Connecticut's population, more than 1.1 million residents,⁴ don't have reasonably convenient⁵ access to collection. This includes 16% of the State's residents that lack access to any type of municipally based collection.

For residents in cities and towns that typically dispose of a mattress by placing it at the curbside, convenience and accessibility to recycling is still a challenge. Hartford is alone among the State's larger cities where mattresses left at the curb are recycled through the program. Mattresses left at the curbside in New Haven and Waterbury, and are collected as bulky waste are not recycled through the program. Residents of Bridgeport are required to bring their



³ Email from Dan McGowan, MRC July 1, 2022.

⁴ Numbers come from MRC spreadsheet included in email from MRC to DEEP July 2020. Convenient collection would include a municipal drop-off site within the town and curbside collection for cities over 100,000.

⁵ Definition of reasonably convenient means curbside collection for municipalities with a population over 100,000 and a transfer station drop site for all other towns.

mattresses to the transfer station and Stamford does not provide a permanent collection site but relies on one day collection events. The mattress recycling facility in Willimantic has the capability of processing some wet and broken mattresses although it requires more labor and is not preferred. Hartford and Manchester, which both ask residents to leave their mattresses at the curb, utilize the Willimantic facility while the other cities are served by the Bridgeport facility which is not set up to accept wet mattresses. As a result, 1,000 units per month are processed from Hartford while only 100 units per month, collected at the transfer station, are processed from New Haven.⁶

Stamford has decided to offer one-day collection events. Residents have the option to bring in unwanted mattresses to a fixed location on a specific day. While a collection day does provide an opportunity for participation, it offers minimal convenience compared to leaving it at the curbside. As a result, the number of mattresses collected in Stamford is much lower than Hartford. Waterbury has only recently decided to participate in the program through transfer station drop-off. Bridgeport participates only through the transfer station as a drop-off location. The number collected through the transfer station is much lower than the amount collected at curbside in Hartford. Although the recycling facility is in Bridgeport, only about 300 mattresses were directly received by the facility from all towns in 2020-2021. One day collections, while important for towns that don't have a permanent location, have not provided the same collection numbers as transfer stations. In the 2020-2021 reporting year, there were 23 separate collection events from 11 towns with a combined population of 296,000 that brought in only 2,387 units.⁷ This total represents about the same number as the City of Hartford collects on average in less than 3 months.

RECOMMENDATION #1

Expand Curbside Collection

The greatest room for improvement with the program lies in providing greater convenience for our cities. MRC must develop a plan to provide curbside collection of mattresses to municipalities that rely on this type of collection. It is not realistic to expect residents in a city that are accustomed to disposing of an unwanted mattress by leaving it at the curb to change their habit and bring it to a transfer station. Possible solutions include contracts with private haulers for pick up by appointment or working with existing processors to develop and implement technology to recycle wet mattresses.

Many other municipalities typically collect mattresses at the curb. Providing curbside service will likely increase the number of mattresses recycled even from those municipalities that already have a drop-off location. For example, Manchester, with a population of 58,000, collected approximately 5,090 mattresses at curbside through the program in 2018. East Hartford, with a population of 50,000, also collects curbside and had 4,214 mattresses collected in 2018. West Hartford, with a population of 63,000, collected only 1,443 mattresses through drop-off only during the same time period.

Recovery from Non-residential Generators

Other generators of discarded mattresses are eligible to participate in the program as prescribed in law. These generators include hotels, hospitals, correction facilities, volume reduction facilities, universities and boarding schools, military bases, and waste-to-energy facilities.

⁶ DEEP Annual Municipal Reporting form.

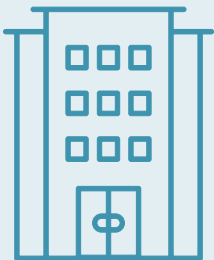
⁷ Emails from Dan McGowan, MRC to DEEP, July 1, 2022

Most mattresses recovered through the program have come from municipalities, primarily coming into transfer stations.⁸ MRC has worked with each of the other generator types to provide for the management of discarded mattresses. It is important that MRC continue to work with each sector to maximize recycling although the cumulative impact is smaller than the growth potential of the municipal sector.



Volume Reduction Facilities (VRFs)

When mattresses are delivered to VRFs, they are frequently not processable due to their condition. Mattresses at VRFs are mixed with other bulky wastes such as furniture and construction and demolition debris and therefore frequently become damaged and not recyclable. As a result, MRC has been working with haulers that deliver to VRFs to divert mattresses from disposal. The haulers work with the generators to educate them on options available for recycling including working directly with MRC to divert mattresses to recyclers. MRC is also working with upstream generators (such as universities or hotels) and other generators such as municipalities to divert mattresses to the recyclers directly. MRC reported recycling 18,265 units from working with VRFs in the last reporting period, a significant increase from previous years.⁹ Working with upstream generators and VRFs to divert mattresses is the best strategy going forward.



Hotels

MRC currently works with 69 lodging establishments, an increase of 10 over the past year, to recycle their mattresses. During the 2021 reporting period, 12 hotels discarded a total of 1,651 mattresses through MRC.¹⁰ This number is a substantial decrease from the 2020 reporting period, when MRC reported collecting 4,752 mattresses. This may be attributed to behavioral and economic changes due to the COVID-19 pandemic. Despite this, the program improved in a key metric – the number of establishments registered and participating in the program. Most hotels sell or give unwanted mattresses to renovators due to their resale value. These mattresses are typically high quality and replaced well before they are worn out. Hotels also replace mattresses on differing schedules so the number coming through the program annually will vary and is unlikely to increase substantially. For example, one hotel may change mattresses once every 10 years, and when that change occurs there will be a spike in mattresses collected for that year. This causes relatively predictable fluctuations in annual collection from the hotel sector. Mattresses that are individually replaced due to damage are often discarded as bulky waste because hotels typically don't have the storage space to hold on to mattresses until a significant volume is accumulated. There is no specific recommendation for the lodging sector other than to continue to recruit more participants.

⁸ MRC annual report 2020–2021.

⁹ Ibid

¹⁰ Ibid



Retailers

MRC has been working with retailers that accept discarded mattresses when they deliver purchased mattresses. MRC will provide transportation to retailers and third-party transporters who aggregate more than 50 units at a time. Currently 40 retailers participate in the program. In the 2020 reporting year, MRC accepted more than 37,000 mattresses from retailers.¹¹ MRC predicts this number to trend downward due to an increase in mattresses delivered direct to consumers and fewer box springs being sold. The MRC should continue to work with retailers on take back programs however the number collected is plateauing and the department does not anticipate significant growth from this sector.



Hospitals and Healthcare Facilities

Hospitals and healthcare facilities are allowed to participate in the MRC program but after seven years there has been minimal participation. In the 2020 reporting year, only 178 units were collected from 11 participating facilities.¹² In 2021, no mattresses were recovered from healthcare facilities, likely due to the COVID-19 pandemic. MRC reports two primary reasons for the low recovery rate from hospitals and healthcare facilities: 1) the high resale value of specialty hospital mattresses makes them valuable on the resale market, and 2) contamination due to bodily fluids that requires special handling. The recommendation for this sector is to continue to offer collection and recycling as an option for suitable mattresses.



Correctional Facilities

Mattresses generated by correctional facilities are not currently being recycled. This is primarily because they are not made from the same materials as conventional mattresses. These mattresses do not contain any metal or wood and can't be processed through the same practices as used for residential mattresses. Correctional facility mattresses are made from textiles and other materials and have the potential to be recycled through textile recyclers. MRC is continuing to look at alternative processes and markets for correctional facility mattresses. One potential source is textile recycling, which should be explored further.



Waste-to-Energy Plants (WTE)

As with VRFs, mattresses that are delivered to a WTE facility are not usually in a condition to be recycled. The MRC has instead focused on working with the WTE facilities to divert mattresses through collection at municipal transfer stations.

¹¹ Ibid

¹² Ibid



Military Bases

The submarine base in Groton is fully participating in the program. MRC has indicated the base has recycled more than 2,300 mattresses since the program's inception. In addition, MRC recycled 374 COVID field hospital mattresses from the National Guard.¹³ There are no additional recommendations for this sector.



Educational Facilities

Educational facilities have not generated large amounts of recovered mattresses. However, having this service available for educational facilities saves money for those schools and diverts mattresses from disposal at bulky waste facilities and VRFs. In the 2021 reporting year, 3,600 mattresses were recycled from 12 educational facilities.¹⁴ The number of educational institutions participating has grown slowly and the number of mattresses recycled has remained about the same. There are no specific recommendations other than to continue to recruit more participants.

RECOMMENDATION #2:

Address discarded, non-recyclable mattresses

Section 22a-905c of the Connecticut General Statutes established a stewardship program, not simply a recycling program. Thus, all discarded mattresses are intended to be managed through the program, even if they are not recycled. Currently, the program requires municipalities and other covered generators to separate out mattresses which are not recyclable due to condition. Municipalities are then responsible for financing the disposal of non-recyclable mattresses. Without noticeable improvement in the recovery and recycling rates, including the ability to manage wet mattresses. MRC should be required to pay for a percentage of municipalities' costs to dispose of non-recyclable mattresses.

Recovery Rate

The program has demonstrated consistent growth over its first six years. Much of this growth has come from municipalities deciding to join the program after observing the program in action. There was a particularly large increase in 2020-2021 which may be related to the COVID-19 pandemic. There have also been increases in mattresses recovered from retailers and other generators.

¹³ Ibid

¹⁴ Ibid

TABLE 1

Year	Number of Mattresses Recovered ¹⁵	Tons of Material Recycled	Number of Participating Towns
2020-2021	213,543	3,813	140
2019-2020	189,492	3,403	136
2018-2019	184,190	2,963	136
2017-2018	181,070	2,798	129
2016-2017	162,000	2,300	125
2015-2016	90,000	1,910	100

One measure for investigating the effectiveness of the program is to look at how Connecticut’s per capita recycling rate compares to the only other states that have this program, California and Rhode Island. The Department looked at five years of collection data in all three states. However, comparing per capita collection with these other states needs further evaluation. On a per capita basis Rhode Island collects more than double the amount California collects. Connecticut is in between. The MRC has explained that the Rhode Island numbers are higher for several reasons. First, Rhode Island has a single landfill. As a result, the state can more easily divert discarded mattresses from its waste stream. Second, mattresses from Massachusetts sources leak into the RI program to avoid processing fees. Third, MRC suspects some RI consumers purchase units in Massachusetts to avoid paying the point-of-sale fee. California’s numbers are lower due to the high volume of mattresses diverted for refurbishment and resale, particularly in Mexico. Connecticut’s numbers are more reflective of what is actually collected but don’t offer much insight on the potential growth of the program.¹⁶

Processors’ Performance

TABLE 2

State	Per Capita Recycling Rate
Rhode Island	0.084
Connecticut	0.052
California	0.034

There have been some challenges with processor performance in the program, but MRC has dealt with them effectively. Early in the program, one of the two original contracted recyclers had numerous violations and performance problems. The facility was not able to process mattresses quickly enough and began to store mattresses in violation of their permit and local fire standards. The backlog also

led to long wait times to drop off mattresses. The town and state had to intervene, and MRC eventually canceled their contract with this processor because of these and other contract violations. MRC continued to serve municipalities by diverting some mattresses to the other Connecticut processor as well as to a recycler in Rhode Island. A new processor in Willimantic was retained shortly thereafter and there have been no significant performance issues since. The other Connecticut processor is in Bridgeport and had been operating before the law took effect. When the stewardship program began, they found that their location was too small to efficiently handle the volume of mattresses they were receiving. This led to long wait times for unloading mattresses. This processor has made modifications to the existing facility which should address some of the concerns described above.

¹⁵ Each mattress counts as 1, and each box spring counts as 1. Thus, a mattress and box spring set counts as 2 for purposes of reporting the number of units recycled.

¹⁶ Email from MRC to DEEP June 21, 2022.

Eco Fee

Financial audits indicate that the program is covering all the costs while maintaining a healthy reserve. All else being equal, the amount of program income will not significantly vary year after year because the number of mattresses sold annually in Connecticut is likely to be relatively consistent. Over the longer term revenues may decrease due to replacement of box springs with other technologies. On the other hand, program expenses will go up as more towns fully participate or more mattresses are collected through the program. If neighboring states New York and Massachusetts were to join the program, the scale and marketing opportunities could bring operating costs down.

In July of 2020, MRC informed the department of their intent to increase the eco fee to \$11.75, citing decreased revenues due to fewer box springs being purchased, and higher expenses associated with an increase in the number of mattresses recovered and a rise in processing costs, among other factors.¹⁷ The eco fee increase went into effect on January 1, 2021.

Having a flat eco fee on all mattress and box spring sales presents some drawbacks. The flat eco fee is charged universally regardless of cost of the mattress or the recyclability of the materials in the mattress. The eco fee is more of a burden for low-income residents who wish to purchase discount mattresses. Many lower income residents in the state have less convenient access to mattress recycling options. Thus, those lower income residents are effectively subsidizing program costs for residents that purchase higher cost mattresses and have more convenient recycling options.

RECOMMENDATION #3:

Assess the eco fee based on the retail price of the mattress.

Such a price structure would be more equitable for residents of the state. If economically feasible, the eco fee could even be exempt from sales of very low-cost mattresses.

Program Design



Regional Coordination

There are currently three states that have a stewardship program for mattresses: Connecticut, Rhode Island, and California. Oregon has passed legislation to create a program but has not implemented the program to date. Several states, including New York, Maryland, Missouri, and Maine have considered mattress stewardship legislation. Massachusetts is proposing a

¹⁷ Letter from MRC to DEEP July 1, 2020

disposal ban for mattresses designed to invite investment in recycling. MRC and the states can achieve greater efficiencies by administering this program regionally. This administration could operate in a similar manner to the states' mercury program through the Northeast Waste Management Officials Association (NEWMOA).



Ownership of Mattresses and Commodities

Under the current plan, the MRC contracts with transporters and processors. The processors are then responsible for finding markets for the commodities. Although the MRC is responsible for maintaining a reasonable rate of recycling, the recycling rate would be theoretically higher if they owned the materials. For example, wood recovered from box springs is usually sent for biofuel. The wood could be sent for mulch, a higher end use, but metal staples make mulching difficult and more expensive. If MRC was responsible for marketing the recycled material, they would have a financial incentive to work with the industry to redesign how box springs are constructed or develop technology for removing staples. Current mattress construction does not take disassembly into consideration.

RECOMMENDATION #4:

Support the mattress stewardship program in neighboring states and coordinate regional program administration, including covering the State's administrative fees.

If the MRC program were to expand to other states in the region, Connecticut could experience increased recycling investment, increased market opportunities, and innovation due to scale. MRC has supported legislative efforts in both New York and Massachusetts.

Regional administration through an organization like NEWMOA could create additional efficiencies for the program. MRC should cover the State's administrative fees, which could be passed on to a third-party for administration. In Oregon, MRC will pay state administration fees according to Oregon DEQ.

RECOMMENDATION #5:

MRC should own the materials recovered from mattresses.

The processor should be paid by the MRC as a service provider for collecting and processing mattresses. If the MRC were required to find markets for the commodities, they would be more actively involved in market development. This would encourage closer adherence to the state's statutory materials management hierarchy while also creating a financial incentive for cleaner streams and market development.

Recycled Content in New Mattresses

Section 21a-231 to 233 of the CGS establishes consumer protection laws regarding the refurbishing and manufacturing of mattresses designed to protect consumers from unsafe mattresses. These laws require labels on mattresses which indicate whether the fill material is "new" or "secondhand." The Department of Consumer Protection is responsible for administration of these mattress laws. The MRC has expressed concern that foam and cotton from mattresses recycled through the program might be considered "secondhand." DEEP, MRC and DCP have agreed to look at how to expand the markets for recycled cotton and foam

RECOMMENDATION #6:

Seek clarification on recycled content in the manufacture of new mattresses

If recycled fill material can be considered new it will create a closed loop market for foam and cotton.

Review of Impact on Mattress Sales in Connecticut Border Towns

When this program was initially debated, there were concerns expressed that Connecticut residents would go to New York and Massachusetts retailers to avoid paying the fee. In 2018, DEEP contacted retailers on both sides of the border to see if there was any justification for those concerns. Although it is a small sample, retailers indicated that the fee and program did not have a significant impact on sales. See Appendix A for details.

Program Goals

Goal for the Number of Discarded Mattresses Managed Under the Program



Establishing a Goal

To establish a goal for the number of mattresses managed under the program, the department looked at the number of mattresses managed under the first six years and areas where more mattresses could be added. The program has shown significant growth, mostly due to an increase in the number of participating towns.

By improving collection in Waterbury, Bridgeport, New Haven and Stamford, accommodating towns with curbside collection of mattresses, and increasing collection in retail, hotels and universities, the department believes the program can attain a goal of 250,000 mattresses managed per year by 2027.

Year	Mattresses Recovered
2015-2016	150,000
2016-2017	162,000
2017-2018	182,000
2018-2019	184,000
2019-2020	189,000
2020-2021	210,000
2027 goal	250,000



Justification for the Goal

The mattress stewardship program has grown from 90,000 units recycled in the first year to 210,000 units recycled in the sixth year. During the first six years of the program, the MRC focused on introducing the program to Connecticut municipalities and other generators listed in the law, advertising to and educating the public, working with retailers on the eco fee assessment, and partnering with processors on marketing materials and servicing drop sites. MRC has established a relationship with generators such as hotels,

educational institutions, and correctional facilities. Based on an evaluation of MRC’s annual reports and interviews with municipalities and processors, the department believes most additional mattresses available for recovery will come from municipalities that are not fully participating, including our larger cities, and a lesser but significant number from retailers and other generators. During the most recent year, the program took in 210,000 mattresses representing a significant increase over previous years. This increase may have been influenced in part by the COVID-19 pandemic and the department has taken that variable into consideration when setting this collection goal.



Reaching the Goal

There are an estimated 280,000 mattresses discarded in Connecticut annually. This number is based on the number of mattresses collected from the MRC, an estimate of the number not collected from the larger cities, and an estimate from the other municipalities and generators not fully participating in the program.

TABLE 4

2019-2020 Units Collected¹⁸	189,000
Potential Additional Collection from Cities over 100,000	45,000
Potential Additional Collection from other towns not currently fully participating	10,000
Potential Additional Collection from other generators – retail, colleges, etc.	6,000
Goal of Mattresses Collected through the program	250,000

The Following Strategies Will Help Reach the Goal:

1. Increase mattress collection from cities

TABLE 5

Municipality	Average number of mattresses collected per month	Potential additional mattresses based on Hartford model
Hartford	1,000	N/A
New Haven	135	865
Bridgeport	135	865
Waterbury ¹⁹	0	1,000
Stamford	0	1,000
Total	1,270	3,730 per month

¹⁸ The 2019-2020 reporting year was used rather than the 2020-2021 reporting year to limit the influence of the COVID-19 pandemic on the data used to set the collection goal.

¹⁹ Waterbury began mattress collection in March 2022 and collected 400 mattresses in the first two months of the program.

The City of Hartford currently collects about 1,000 mattresses per month at the curbside and arranges for delivery to the processor in Willimantic. On occasion, these mattresses are wet due to sitting out in the rain or snow. Wet mattresses are more difficult to process and recycle. It is preferred that they remain dry but the facility in Willimantic is capable of processing wet mattresses.

No other Connecticut city with a population over 100,000 recycles as many mattresses as Hartford. Waterbury only began accepting mattresses at their transfer station in March of 2022. Bridgeport and New Haven participate through drop-off at a transfer station without offering curbside collection, and Stamford participates only through a one-day collection event. The MRC must develop a plan to manage mattresses from these larger cities as well as any town that collects mattresses at the curb. While this may add to the cost to run the program, it will increase collection and offer service to city residents that pay the fee at retail but don't have the level of convenience offered to residents that have cars and can transport a mattress to a transfer station.

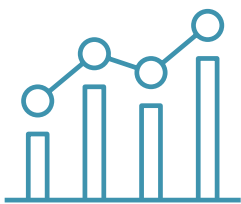
2. Increase the number of towns participating

While most Connecticut towns participate in the program, there are still municipalities that don't participate, including some larger towns. A few towns have cited concerns about bedbugs as a reason for not participating, yet they are accepting mattresses in their bulky waste. Increasing the number of towns could add another 10,000 units per year.

3. Increase collection from retailers and other sectors

MRC has been working directly with retailers, but it has been common practice for third party transporters who accept used mattresses when delivering a purchased mattress to sell some of those mattresses to a refurbisher. These mattresses then fall outside the program even though many of these mattresses are unfit for resale or refurbishing. MRC should also work with third party transporters to ensure that mattresses unfit for resale or refurbishing are sent to one of the two mattress recycling processors in the State.

While some universities and boarding schools participate in the program, after seven years the number is relatively small. Hotels tend to replace mattresses well before their useful life and frequently sell them as used or to licensed refurbishers. Increasing the number of mattresses from retailers and other generators could bring in another 6,000 mattresses per year.



Factors that can Negatively Impact the 250,000 Goal

There are an estimated 280,000 mattresses discarded in Connecticut annually. This number is based on the number of mattresses collected from the MRC, an estimate of the number not collected from the larger cities, and an estimate from the other municipalities and generators not fully participating in the program.

1. Changes in Technology

Since the onset of the program, there has been an increase in online mattress sales with mattresses being shipped direct to consumers. Many of these newer technologies do not require a box spring foundation. This will decrease the number of box springs coming into the program. Improvements in the useful lifespan of a mattress would also decrease the number of mattresses coming into the program in a given year.

2. The Economy

If there is greater demand for refurbished mattresses, there will be fewer mattresses going into the collection program.

3. Refurbishers

A significant number of mattresses end up in the hands of mattress refurbishers and resellers. They will buy or take mattresses collected from homeowners or from delivery companies and resell or refurbish them. The mattresses that can't be refurbished or resold are discarded with a minimal amount of material recovery. Refurbishers will dispose of mattresses they cannot refurbish and sell outside of the MRC program, often because they are located out of state. This will impact the number accepted from retailers and lodging establishments.

Goal for the Number of Mattresses Recycled

Most mattresses collected through the program are recycled, however many mattresses never make it into the program. The MRC has established guidelines for acceptable mattresses, and mattresses deemed not acceptable are disposed of by the municipality or other covered generator. Mattresses not accepted under the program include those that are infested, mangled, or in some cases, excessively wet. If the MRC was responsible for paying for disposal of all mattresses regardless of whether they were recycled, the fee assessed at the point of sale would go up substantially, at least initially.

A better substitute metric for the number of mattresses recycled would be the percent of a single mattress that is recycled. The MRC reports that 73% of the material by weight that came into the program was recycled in the 2021 reporting year.²⁰ The recycling rate in Rhode Island for the same year was 60% and in California 77%. MRC has established a goal of recycling 75% of a mattress by weight through their plan. Materials recovered from mattresses include metal, foam, cotton, and wood. The department believes the MRC should be recycling no less than 90% of a mattress by weight by 2025.

The MRC has indicated that certain materials are more problematic to recycle such as pocket coils, and cotton. Markets can be seasonal or limited. One example cited by MRC are quilt panels. They are made into carpet padding and that market can fluctuate based on demand. MRC has done extensive research into market development in California which may increase the percent of a mattress recycled.²¹ While the MRC works with the two processors to find markets for commodities, they do not assume the costs of marketing those materials. If MRC was required to own the materials, and the plan required higher end recycling, then the MRC would invest more in market development and efficiencies in Connecticut. The manufacturers are best positioned to increase the value of the commodities recovered from a mattress. As an alternative, MRC could commit to a certain amount of funding for research and development like California.

²⁰ Email from MRC July 19, 2022.

²¹ [MRC website](#).

Conclusion

The mattress stewardship program has been operating since May 2015 and has collected more than 1.2 million mattresses through the first six years. In the most recent reporting year, the program recovered 210,000 mattresses which is an estimated recycling rate of 76%.²² The program has saved participating Connecticut municipalities more than \$10,000,000 in avoided disposal costs.²³ The program has created or sustained 42 jobs at two Connecticut mattress recyclers.²⁴

There is enough data and experience from looking back at the past seven years to learn from and improve the program. The single most important change needed is to address mattresses collected at curbside in our cities to improve program access. City residents pay the same fee as other residents but, in many cases, do not have the same level of access and convenience. If enacted, the above recommendations will result in higher participation, new markets for recovered materials, and greater savings for municipalities. Improving recovery at other facilities including hotels, schools, and universities, and retailers will help reach the full potential of this program. Implementing some of these recommendations will likely result in increased program costs, which could necessitate an increase in the eco fee charged at retail which sustains the program. There are steps that could support the program financially including the passage of a mattress EPR law in Massachusetts and New York and clarifying consumer protection laws to open markets for closed loop recycling. By making the program less costly, convenience and accessibility can improve without needing an increase in the eco fee.

²² Based on estimate of 275,000 generated annually.

²³ PSI report Connecticut Extended Producer Responsibility Report - pg. 9.

²⁴ Emails from Park City Green and Dan McGowan, MRC Aug 11, 2022



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**Connecticut Department of Energy
and Environmental Protection**