

CMMS AMENDMENT

JANUARY 2023

DRAFT

Connecticut
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Executive Summary

This Comprehensive Materials Management Strategy (CMMS) Amendment (also called “CMMS Update”) put forward by the Connecticut Department of Energy and Environmental Protection (DEEP) identifies strategies for restoring “self-sufficiency” in Connecticut’s municipal solid waste (MSW) management, in light of the Material Innovation and Recycling Authority’s (MIRA’s) decision to cease waste-to-energy (WTE) operations at their Hartford Resources Recovery Facility (RRF) in July 2022, which has substantially reduced Connecticut’s in-state waste disposal capacity. In 2021, the most recent year for which DEEP has complete data, there were 2,161,762 tons of MSW generated in Connecticut. Of that, 1,788,857 were managed at in-state RRFs, meaning that 17%, or 372,905 tons, of MSW generated in state was sent out of state for disposal. This represents Connecticut’s “self-sufficiency deficit.” DEEP estimates that the Hartford RRF closure will increase the self-sufficiency deficit to 40%, or approximately 860,000 tons per year.

Connecticut’s response to the closure must be to restore self-sufficiency as soon as possible by (1) accelerating and maximizing diversion solutions consistent with the CMMS and the state’s statutory waste hierarchy, and (2) investing in disposal infrastructure for the balance of tonnage not addressed through diversion. This CMMS Update recommends two main strategies for accelerating and maximizing diversion solutions including:

- Enacting legislation to authorize an Extended Producer Responsibility (EPR) Program for packaging materials, which DEEP estimates will reduce MSW disposal by up to 190,000 tons per year while saving \$50 million per year for municipalities; and
- Implementing organics reuse and diversion strategies, including pursuing more opportunities for source reduction and food recovery, adding authorized transfer stations as triggers for the Commercial Organics Recycling Law, expanding the Commercial Organics Recycling Law to cover institutions, and providing universal access to source separated food scrap collection to all residents and businesses. DEEP estimates that by implementing these organics strategies, MSW disposal can be reduced by 185,000 tons per year.

If both key diversion strategies are employed, Connecticut will reduce its self-sufficiency deficit from 860,000 tons per year to 485,000 tons per year before the end of the decade. This reduction still leaves a substantial amount of MSW that would need to be exported for disposal. With limited in-state disposal capacity, and the closure of the Hartford RRF, increasing exports (primarily to out-of-state landfills) have coincided with increasing tipping fees for disposal paid by municipal taxpayers and individuals. Tipping fees are expected to increase as landfills continue to close in the Northeast, creating increased competition for landfill space further from the state.

Thus, the remaining 485,000 tons per year will have to be managed through additional source reduction efforts, development new disposal capacity in state, or a combination of both. In order to facilitate the possibility of new disposal capacity, DEEP intends to release a Request for Information (RFI) from developers and other stakeholders regarding various types of waste infrastructure. Building on the work of the legislative Solid Waste Management Working Group (Working Group) convened pursuant to [Special Act 22-11](#), this RFI will give the state a further understanding of available technologies and solutions for disposal, recycling, and organics infrastructure. Additionally, DEEP will seek to assist municipalities in forming regional waste authorities (RWAs), the entities that have historically backed the development of waste infrastructure in Connecticut, including providing grants for planning and establishing RWAs.

Most importantly, DEEP will engage the legislature to seek authorization for packaging EPR, accelerated organics diversion, as well as enhancements to the state Solid Waste Assessment – a fee currently set at \$1.50 per ton of MSW that is managed at in-state RRFs – to cover multi-town transfer stations and volume reduction plants in order to capture material that is sent out of state for disposal. Such changes would better align the solid waste assessment with the state’s statutory waste hierarchy and provide revenues that could be used to support diversion strategies and then backstop revenue bonds to lower the cost of new waste disposal infrastructure development.

Introduction

The Department of Energy and Environmental Protection (DEEP) is charged statutorily with developing a state-wide solid waste management plan and amending it from time to time. The plan is required to address disposal options in Connecticut and establish specific goals for reducing waste in accordance with a statutory order of priority for managing solid waste called a “waste hierarchy.” The waste hierarchy favors source reduction and reuse, recycling, and composting, with remaining materials managed for energy recovery, and disposal in landfill as a last resort.¹

¹ Conn. Gen. Stat. Section 22a-228.

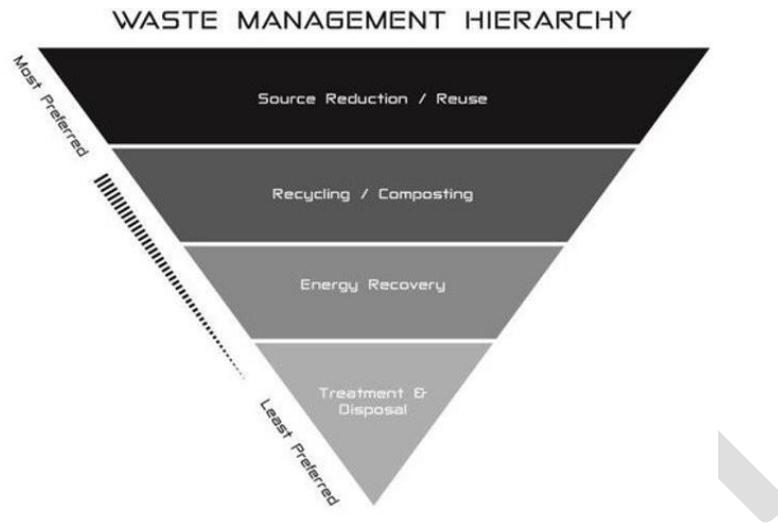


Figure 1: The state's waste hierarchy.

The state's current solid waste management plan was released in 2016 and is referred to as the Comprehensive Materials Management Strategy (CMMS, or 2016 CMMS).² This document serves as an amendment to the 2016 CMMS.

The 2016 CMMS seeks to both promote best practices in reduction, reuse, recycling, and composting, and to diversify Connecticut's materials management technologies beyond the current reliance on combustion-based waste-to-energy. Among other things, the 2016 CMMS outlined a detailed roadmap to increase the state's diversion rate from 35 percent to a new statutory goal—enacted in 2014—of 60 percent diversion of materials from disposal by 2024.³ To achieve the diversion goal set by the legislature in 2014, the 2016 CMMS posited that by 2024, Connecticut must reduce annual Municipal Solid Waste (MSW)⁴ by 10 percent and boost the statewide rate of recycling from 35% to 45%, as well as divert 300,000 tons of organic waste annually, including food scraps.⁵ In support of that vision, the CMMS called for three overarching actions: (1) improving the performance of municipal recycling programs and reducing waste, (2) developing and improving recycling and waste conversion technologies,⁶ and (3) encouraging corporations that design, produce, and market products to share responsibility for stewarding those materials in an environmentally sustainable manner.⁷

² See <https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/Solid-Waste-Management-Plan/Comprehensive-Materials-Management-Strategy>.

³ The 60% diversion goal is codified in Conn. Gen. Stat. Section 22a-241a.

⁴ Conn. Gen. Stat. Section 22a-207(24) defines MSW as "solid waste from residential, commercial and industrial sources," and does not include hazardous waste, land-clearing debris, construction and demolition waste, biomedical waste, sewage sludge and scrap metal.

⁵ CMMS, Page 25.

⁶ CMMS, Page 5. Waste conversion technologies, include, but are not limited to anaerobic digestion, gasification, plasma arc gasification, pyrolysis, and hydrolysis/fermentation (waste-to-ethanol). See also Conn. Gen. Stat. 22a-207.

⁷ CMMS, Page 4.

The CMMS also prioritized “self-sufficiency”: developing and maintaining sufficient in-state capacity for recycling, processing, and disposal to manage waste generated within the state.⁸ The CMMS estimated the state’s actual waste disposal capacity at 2.04 million tons per year (TPY), representing 85% of the permitted design capacity of five resource recovery facilities (RRFs)⁹ operating in the state at the time. The plan highlighted significant risks to the state’s self-sufficiency from the potential closure of the aging RRF owned and operated by the quasi-public Materials Innovation and Recycling Authority (MIRA) in Hartford, which would be exacerbated if the state did not achieve the 60% diversion goal or develop new anaerobic digestion (AD) facilities that were proposed at the time. “If Connecticut falls short of the diversion goal, and/or loses existing capacity,” the 2016 CMMS warned, “the state will face a dire capacity gap that could result in nearly one third of the state’s MSW being sent out of state to landfills.”¹⁰ That scenario has now come to pass.

This Update to the 2016 CMMS (CMMS Update) is being introduced as an amendment to the state’s solid waste management plan to address the significant change to Connecticut’s waste management system caused by MIRA’s decision to cease Waste-to-Energy (“WTE”) activities at its Hartford RRF as of July 19, 2022. This loss of capacity has posed a stark challenge to self-sufficiency – the amount of MSW generated in Connecticut now exceeds in-state disposal capacity by nearly 860,000 TPY, such that Connecticut is poised to export an estimated 40% of its generated MSW. This is inconsistent with the statutory waste hierarchy. Connecticut’s response to the closure must be to restore self-sufficiency as soon as possible by (1) accelerating and maximizing diversion solutions consistent with the CMMS and the waste hierarchy, and (2) investing in disposal infrastructure for the balance of tonnage not addressed through diversion.

This CMMS Update is focused primarily on Connecticut-generated MSW that is disposed at RRFs or landfills, and the changes occurring in managing that MSW due to the cessation of WTE activities at the MIRA RRF. This CMMS Update first analyzes the extent of Connecticut’s current “self-sufficiency imbalance” (or in-state disposal capacity deficit) of 860,000 TPY in light of the MIRA RRF closure. Next, the CMMS Update identifies policies and programs that the state can implement in the near-term, which have the potential to reduce the self-sufficiency imbalance by 44%, or 375,000 tons per year, by 2030. Finally, the CMMS Update details a plan and process for potential investment in incremental disposal capacity, informed by environmental, climate, and environmental justice principles, to eliminate the self-sufficiency imbalance by 2030.

⁸ CMMS, Page 23.

⁹ RRFs are sometimes called Waste-to-Energy (WTE) facilities.

¹⁰ CMMS, Page 25.

Connecticut's Current Self-Sufficiency Imbalance

The CMMS states that “Connecticut should have sufficient in-state capacity for recycling, processing and disposal to manage waste generated within the state. Self-sufficiency in managing solid waste represents good public policy for Connecticut for many reasons, including decreasing the carbon footprint of waste, controlling costs, and avoiding risks associated with exporting solid waste.”¹¹ In recent decades, Connecticut maintained self-sufficiency through a combination of diversion of waste through recycling and composting, and maintaining in-state disposal RRF capacity. Self-sufficiency requires having adequate capacity to process MSW on an economically competitive basis within the state. For example, if the state has adequate capacity but the tip fees for these facilities are not affordable compared to out-of-state alternatives, it is not self-sufficient.¹² DEEP notes that the state’s Solid Waste Assessment, which levies a \$1.50/ton fee on waste disposed of at in-state RRFs, does not apply a similar fee to tonnage sent to landfills or out-of-state RRFs.¹³ In this way, the Solid Waste Assessment contributes to a slight incentive for exporting MSW out of state, where it is most often sent to landfills, and is not aligned with the state’s waste hierarchy and policy of self-sufficiency.

In 2021, Connecticut generated over 3.3 million TPY of MSW, with a diversion rate of 35%: nearly 1.2 million tons were diverted from disposal through recycling or composting. (The 2021 diversion rate is nearly the same as the 35% diversion rate calculated at the time the 2016 CMMS was issued,¹⁴ meaning Connecticut’s diversion rate has stagnated and is not currently on track to meet the statutory goal of 60% by 2024). This leaves nearly 2.2 million tons of MSW requiring disposal at RRFs or landfills. Because Connecticut has no landfills actively receiving MSW, all 1.8 million tons of MSW disposed of within Connecticut’s borders in 2021 were processed at RRFs. Of that 1.8 million tons, the MIRA RRF handled 478,004 tons (well below MIRA’s historic and permitted capacity), while other RRF facilities processed roughly 1.3 million tons. Even with the MIRA facility operating, seventeen percent, or 322,037 tons, of total Connecticut-generated MSW was exported out of state in 2021.¹⁵

In July 2022, MIRA ceased operations at the Hartford RRF, causing a loss of 739,855 TPY (or roughly one-third of) permitted in-state disposal capacity. At the time of this writing, DEEP does not have full figures for the 2022 calendar year to track the actual impact of the RRF’s closure on in-state disposal versus export. However, **DEEP projects (see Table 1, Column B) that the MIRA RRF closure has caused the percentage of MSW exported out of state to increase from**

¹¹ CMMS, Page 23.

¹² Moreover, there is scope within a self-sufficient system for having infrastructure (i.e., transfer stations) that have the capability to support export to out-of-state facilities; this type of export capability can be important for a reliable waste disposal in the event of the outage of a major in-state facility. This export capability for reliability purposes is distinct from having export capability for everyday disposal needs.

¹³ Conn. Gen. Stat. 22a-232.

¹⁴ The 2016 CMMS calculated that at the time, Connecticut had a diversion rate of 35%. That calculation used FY2005 as a baseline for MSW generation. For purposes of this CMMS Update, the diversion rate has been calculated as total tons of MSW diverted from disposal in 2021 divided by total tons of MSW generated that year.

¹⁵ This figure is in line with an estimated 325,427 TPY of MSW (17%) exported on average from 2016-2021.

17% to 40% annually, based on the fact that the remaining in-state RRFs were already operating near capacity and are likely unable to accept additional MSW tonnage.

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Table 1: Connecticut MSW generated in 2021, and a 2021 scenario without the in-state disposal capacity from the MIRA RRF.

All numbers in tons	A. 2021 Actual	B. Scenario, 2021 without MIRA RRF
CT MSW disposed of at in-state RRF	1,788,857	1,300,064
CT MSW disposed of out-of-state (total)	372,905	861,698
CT MSW to out-of-state landfill	322,037	741,060*
CT MSW to out-of-state RRF	50,868	120,638*
<i>Subtotal: CT MSW disposed</i>	2,161,762	2,161,762
CT MSW recycled (total)	944,906	944,906
CT MSW recycled through single stream	461,164	461,164
CT MSW recovered through the bottle bill (estimate) ¹⁶	70,361	70,361
Other CT MSW recycled ¹⁷	413,381	413,381
CT MSW composted (total)	226,095	226,095
CT MSW composted at AD	11,350	11,350
Other CT MSW composted	214,745	214,745
<i>Subtotal: CT MSW recycled & composted</i>	1,171,001	1,171,001
<i>Total: CT MSW generated</i>	3,332,763	3,332,763
CT's MSW Diversion Rate	35%	35%
Self-sufficiency deficit (i.e., percent of total CT MSW disposed that cannot be managed by in-state disposal capacity)	17%	40%

*Projected tonnage based on 2021 MSW disposal rates.

¹⁶ Estimate derived from bottle bill container composition as reported in Material Flow Analysis for Containers Subject to the CT Beverage Container Deposit and Redemption Law (Macri 2015) and 2021 containers redeemed.

¹⁷ Other CT MSW Recycled includes MSW scrap metals, asphalt shingles, batteries, film and other mixed plastics, wood and brush (for reuse/recycling), electronics, mattresses and components, lightbulbs, soil, tires, and waste oil.

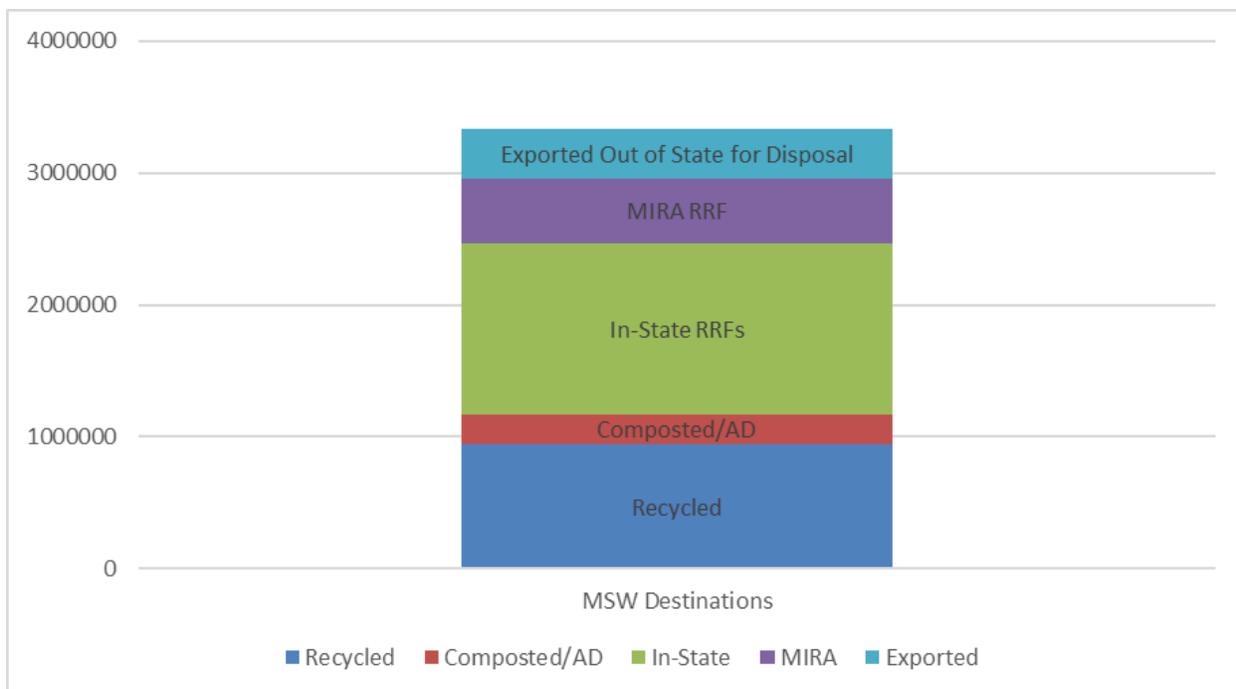


Figure 2: Overview of Connecticut-generated MSW in 2021. Data from reports received by DEEP from solid waste facilities, transfer stations, and municipalities.

With the cessation of WTE activities at the MIRA RRF, Connecticut has four WTE facilities remaining in-state, with a combined permitted disposal capacity of 1,539,497 tons per year—approximately 71% of the 2.2 million tons per year of MSW disposed of in Connecticut. Like the MIRA RRF, these remaining RRFs are also aging – construction dates range from the late 1980s to the mid-1990s. While privately owned, they receive Connecticut ratepayer support of approximately \$15 to 18 million/year in aggregate through the sale of Class II Renewable Energy Credits.

Table 2: Connecticut Resource Recovery Facilities.

Facility Ownership (Location)	Permit to Construct Issued	Initial Issued Permit to Operate	Age	Capacity: Max TPY Permitted for Combustion
Covanta (Bristol)	9/12/1985	5/10/1988	34 years	261,340 TPY (716 TPD)
Covanta (Preston)	12/12/1988	5/14/1993	29 years	251,485 TPY (689 TPD)
WIN Waste (Bridgeport)	10/24/1985	12/21/1988	34 years	821,250 TPY (2,250 TPD)
WIN Waste (Lisbon)	3/18/1993	9/27/1996	26 years	205,422 TPY (562.8 TPD)
MIRA (Hartford) <i>No longer operational as of July 19, 2022</i>	2/11/1985	11/14/1994	28 years ¹⁸	739,855 TPY (2,027 TPD)

¹⁸ Indicates age of RRF facility used for WTE activities; the MIRA power block has been utilized for power generation since the 1920s.

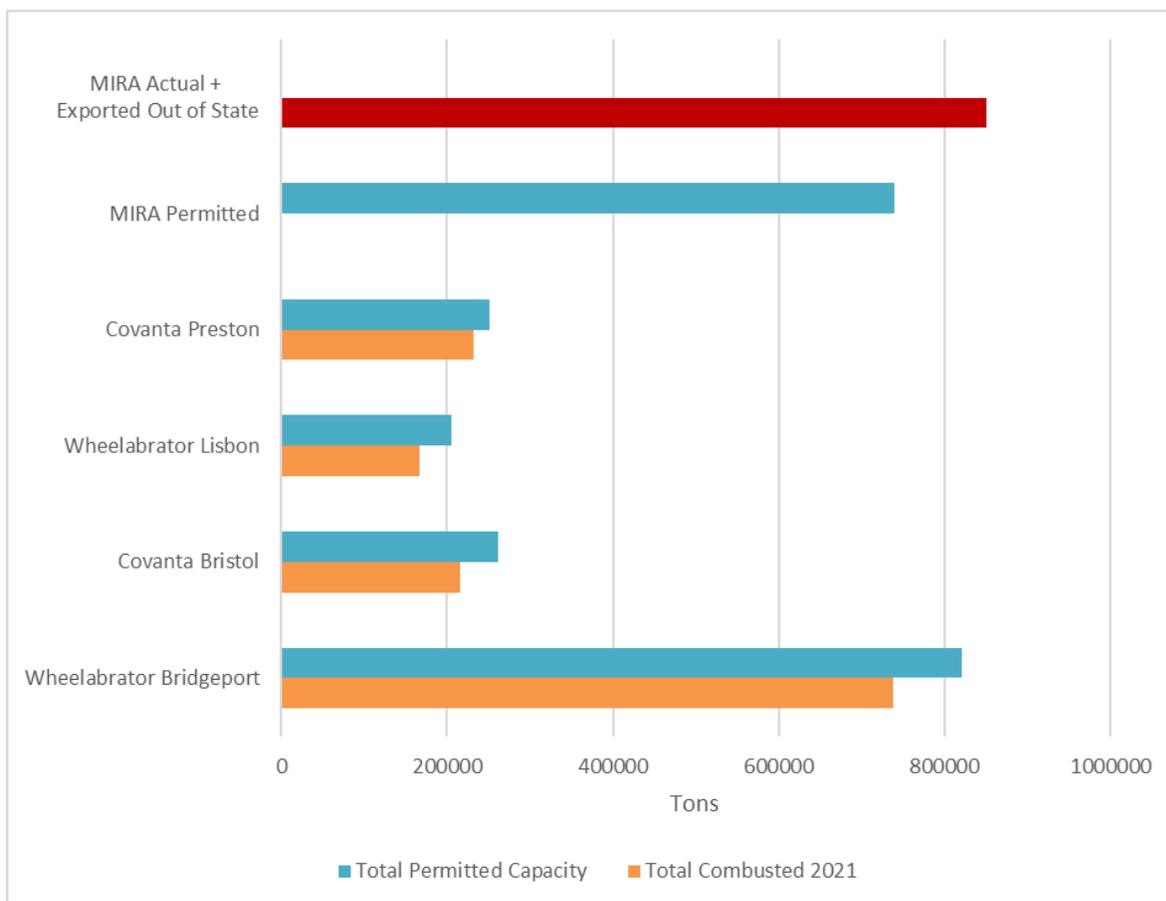


Figure 3: Actual Tonnage Combusted and Permitted Disposal Capacity for Connecticut RRFs (2021).

The remaining RRFs are already operating at or near “practical” capacity of 85% of permitted design capacity.¹⁹ Recent trends regarding in-state processing and export of Connecticut MSW confirm this fact (see Figure 4). As the MIRA RRF has combusted less over recent years, other RRFs in the state have not increased their throughput; rather, exports have increased. In other words, the remainder of MSW that was previously managed at the MIRA RRF or exported now has no viable disposal location in Connecticut, without displacing MSW already being managed at one of the remaining RRFs.²⁰ Consequently, it is reasonable to conclude that since MIRA’s closure in July 2022, approximately 40% of Connecticut-generated MSW is being exported. This increase in exports, facilitated by the diligent efforts of private haulers, has ensured that

¹⁹ The 2016 CMMS assumed actual “practical” RRF capacity to be 85% of permitted design capacity, based on historical throughputs.

²⁰ MIRA member towns have since entered into contracts either through MIRA or independently to provide municipal solid waste transfer, processing, and disposal. MIRA issued Requests for Proposals (RFPs) and received bids from haulers to provide for MSW transfer, processing, and disposal from time of WTE cessation through the end of MIRA’s existing municipal service contracts on June 30, 2027. Most of that waste disposal service will rely on out-of-state disposal, including increased use of landfills.

communities continue to have waste disposal options, without service interruptions, in the immediate wake of MIRA’s closure. Most exports are sent to landfill destinations, the least preferred option under the state’s waste hierarchy (see Figure 5).

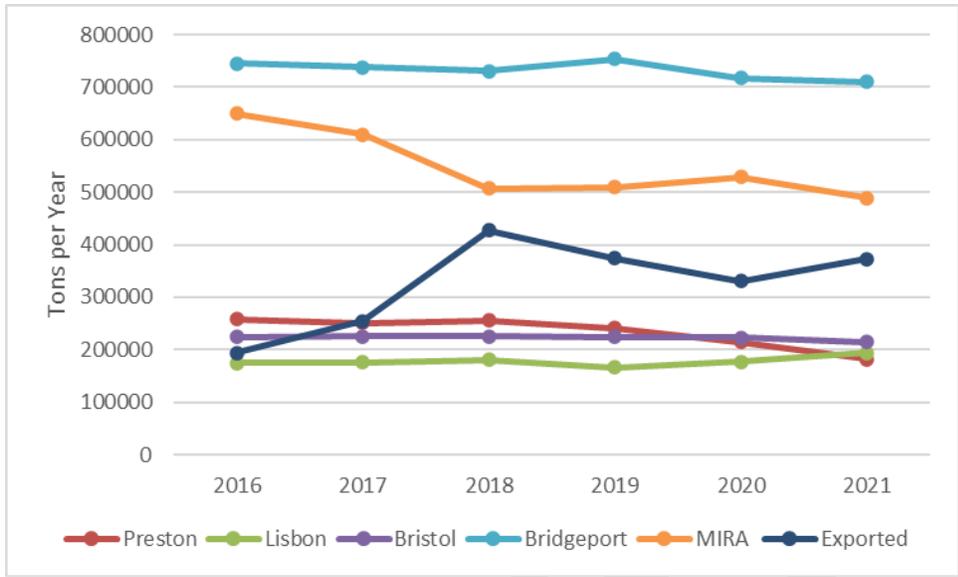


Figure 4: Connecticut MSW Disposal Destinations, 2016-2021.²¹

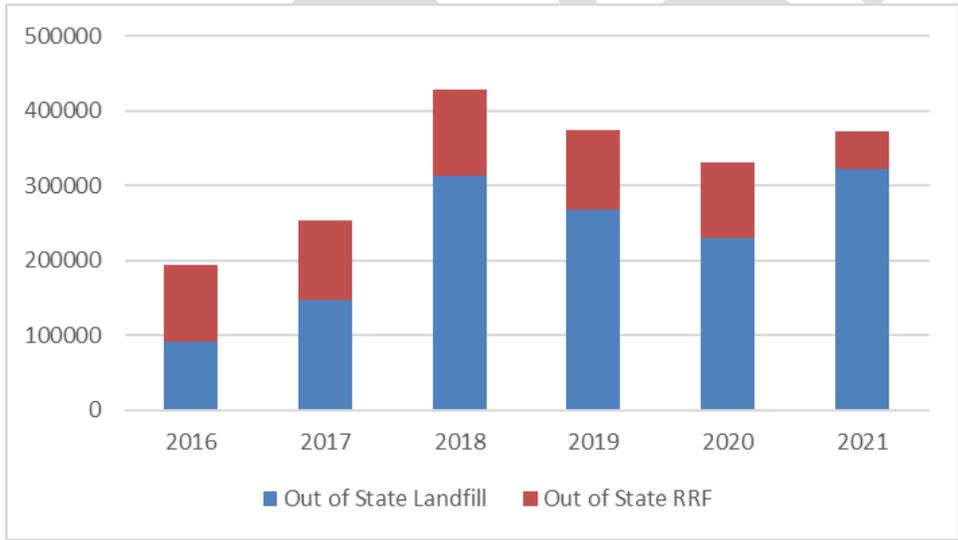


Figure 5: Destinations of CT MSW Exported Out of State, 2016, 2021.

Sufficient supply of in-state processing capacity to meet demand stabilizes costs to the benefit of municipalities and businesses. In addition to the compelling environmental reasons for maintaining a self-sufficient waste system – including reducing greenhouse gas emissions

²¹ Exports spiked in 2018 due to an extended shutdown of the MIRA RRF due to the failure of both of the plant’s turbines at the same time. The shutdown took months to resolve, and MIRA’s tons managed in subsequent years remained lower than prior to the shutdown, keeping exports relatively high in recent years.

impacts from transportation of waste out of state and landfill-related methane emissions – there are strong economic and budgetary benefits as well. Lack of self-sufficiency leads to less predictability in disposal locations and less ability to mitigate costs associated with those disposal locations; landfill capacity will continue to shrink in the coming years (see Figure 7 below), and heavier reliance on the “spot market” tends to be highly costly. For example, in 2015, disruptions to the market caused the closure of Covanta’s Wallingford RRF. The closure, combined with extended shutdowns at other facilities, drove tipping fees for non-contracted spot-market waste to exceed \$100/ton, over twice the typical rate at the time. Municipalities and other customers should plan for much higher costs in the years to come as the result of a disruptions in the in-state (and regional) disposal market associated with insufficient capacity.

Contracted tip fees for MSW have been steadily rising since 2012 and are expected to increase further in the coming years. Figure 6 shows tip fees charged by MIRA to its member municipalities from 2012-2022, which rose from \$69/ton to \$107/ton in that time period. Overall average costs for municipalities have increased from an estimated average of \$60.90/ton in 2012 to \$102.50/ton in 2022. Further, tip fees will continue to escalate through 2026 due to a higher reliance on out-of-state disposal destinations.

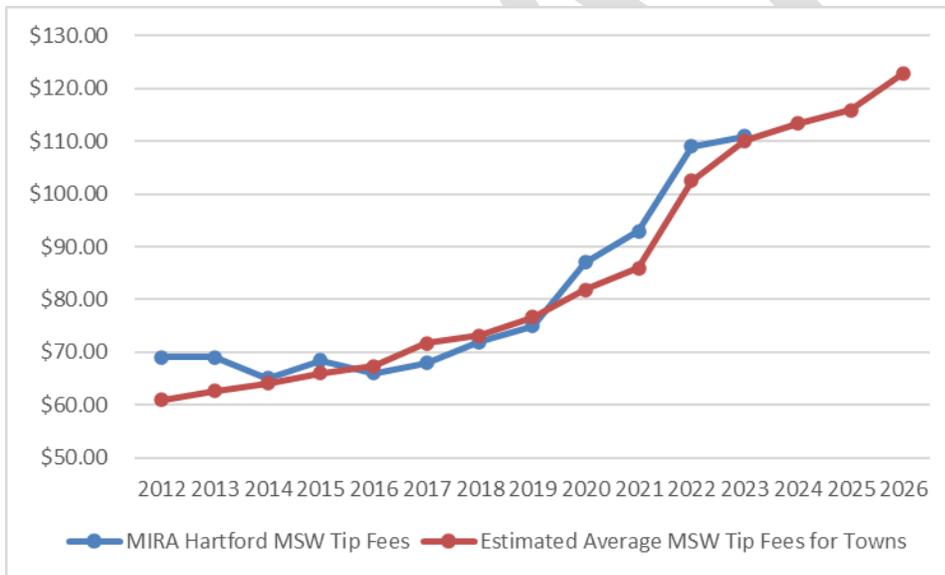


Figure 6: Actual and Projected Average MSW Tip Fees for Disposal. ²²

²² MIRA tip fee information retrieved from publicly available information on MIRA’s website. Municipal tip fee information retrieved from existing municipal service agreements; information on future tip fees through the contract period was included in those agreements. Approximately 15 active municipal service agreements were used to calculate the estimated average tip fee for towns.

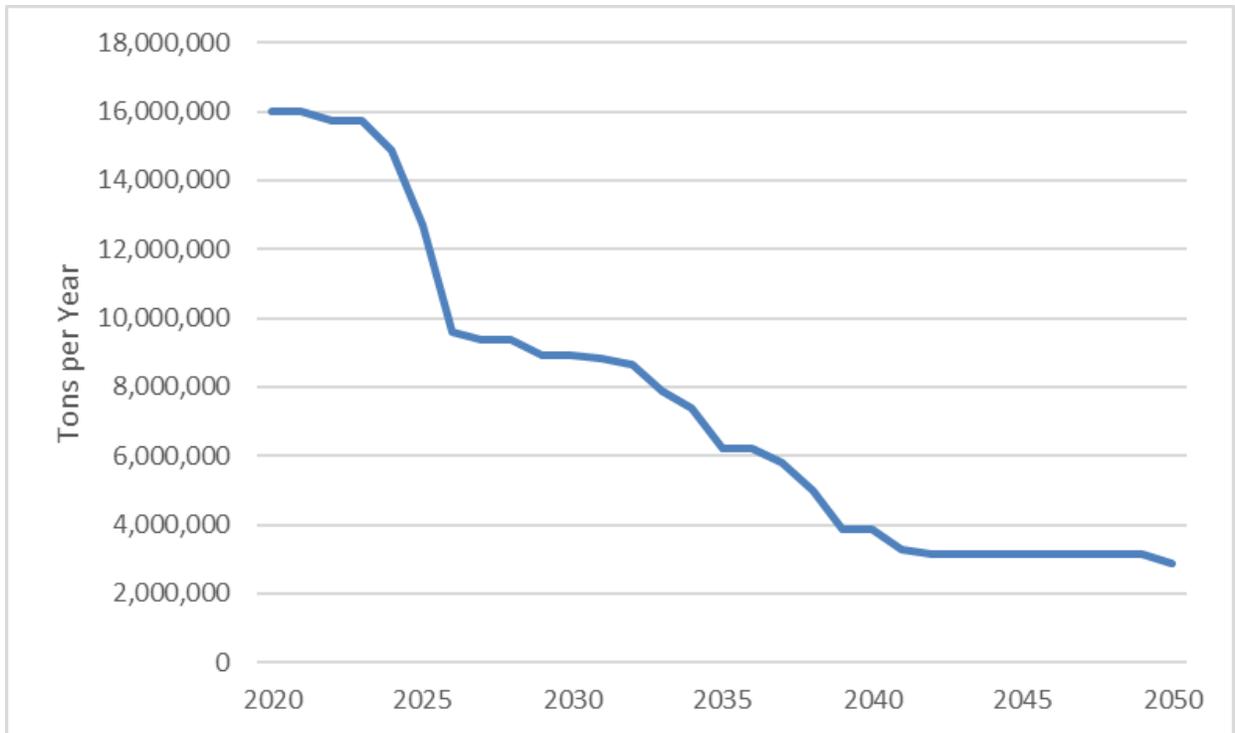


Figure 7: Projected Northeast (ME, MA, NH, VT, RI, CT, NY) Landfill Capacity Through 2050.²³

Landfill capacity in nearby Northeast states is already limited and will continue to decrease over the next 30 years (Figure 7). Nationally, landfill space is also limited and projected to continue to decrease as older landfills close. It is estimated that the United States has 18 years of remaining landfill capacity left. Most landfills are privately owned and permitted expansions and new sites are not keeping up with capacity losses.²⁴ This will require Connecticut to transport waste farther, competing with other Northeastern states for landfill space and causing elevated transportation costs and environmental impacts.

With the MIRA closure and limited capacity for additional material at in-state RRFs, an estimated 860,000 tons of waste will be exported out of state for disposal each year—this is Connecticut’s self-sufficiency deficit. The next sections will focus on strategies needed to enable the state to eliminate that deficit by 2030.

²³ Sources: Report to the Joint Standing Committee on the Environment and Natural Resources, Maine Solid Waste Generation and Disposal Capacity Report, January 2017; NEW YORK STATE OFFICE OF GENERAL SERVICES, Material Recovery and Waste Reduction Program, ANNUAL REPORT, Fiscal Year 2007-08; BIENNIAL SOLID WASTE REPORT, OCTOBER 2019, Prepared by the New Hampshire Department of Environmental Services; MA Material Management Capacity Study February 11, 2019, MSW Consultants; via Waste Zero Presentation to CCSMM, October 28, 2020.

²⁴ See <https://www.wasteinfo.com/overview.htm#menu0>.

Diversification Strategies to Reduce the Self-Sufficiency Imbalance

Connecticut has significant potential to reduce the self-sufficiency deficit by implementing or scaling up strategies to divert material from disposal. These “diversion strategies” include source reduction (efforts to reduce the use of materials), reuse, and recycling of valuable materials that are found in significant quantities in the tonnage sent for disposal at RRFs and out-of-state landfills.

How much recyclable material is found in Connecticut’s waste stream? The state most recently conducted a waste characterization study for MSW in 2015, which investigated the components of the MSW stream.²⁵ The study found that the most common components of the MSW stream were paper and food waste. In fact, compostable organics comprised of 41.4% of all material in the MSW stream, including 22.3% food waste. Recyclable fiber, plastic and containers made up an additional 17.2% of the waste stream. Ultimately, nearly 60% of the material disposed in Connecticut could be recycled through organics collection programs or single stream recycling. That does not include other material – such as electronic waste – that can be recovered if source separated.

The 2015 study results did not significantly deviate from the results of the previous Connecticut statewide waste characterization study conducted in 2010, though an increase in food waste was noted. The 2015 results are also consistent with waste characterizations completed more recently in other U.S. states.²⁶ For these reasons, it is appropriate to continue to utilize Connecticut’s 2015 waste characterization study to identify, at a high level, the impactful diversion opportunities available to the state today. Figure 8 applies the 2015 waste characterization study’s breakdown of components in the MSW stream to the actual tonnage of MSW generated in Connecticut in 2021. The remaining tons of recyclable or compostable materials in the waste stream—1,266,792 tons in all—substantially exceed the approximately 860,000 tons that the state will now be exporting annually following MIRA’s closure. Diverting more of this material has the potential to significantly reduce or even eliminate the state’s “self-sufficiency” gap. Strategies to maximize diversion, building on the strategies in the CMMS, are outlined below.

²⁵ See <https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/Solid-Waste/Solid-Waste-Characterization-Study>.

²⁶ Wisconsin is the state that has completed the most recent statewide waste characterization study, which was conducted from September-November of 2020 and March-April of 2021. Their results were similar to Connecticut’s 2015 results. Additionally, their study notes that “Most waste categories and components measured for the 2020-2021 Study [were] the same as the materials measured in [the] 2009 [waste characterization Study],” suggesting the COVID pandemic did not significantly affect the makeup of the waste stream. See <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/us-state-and-local-waste-and-materials> and <https://widnr.widencollective.com/portals/9locxp5m/SolidWasteinWisconsinLandfills>.

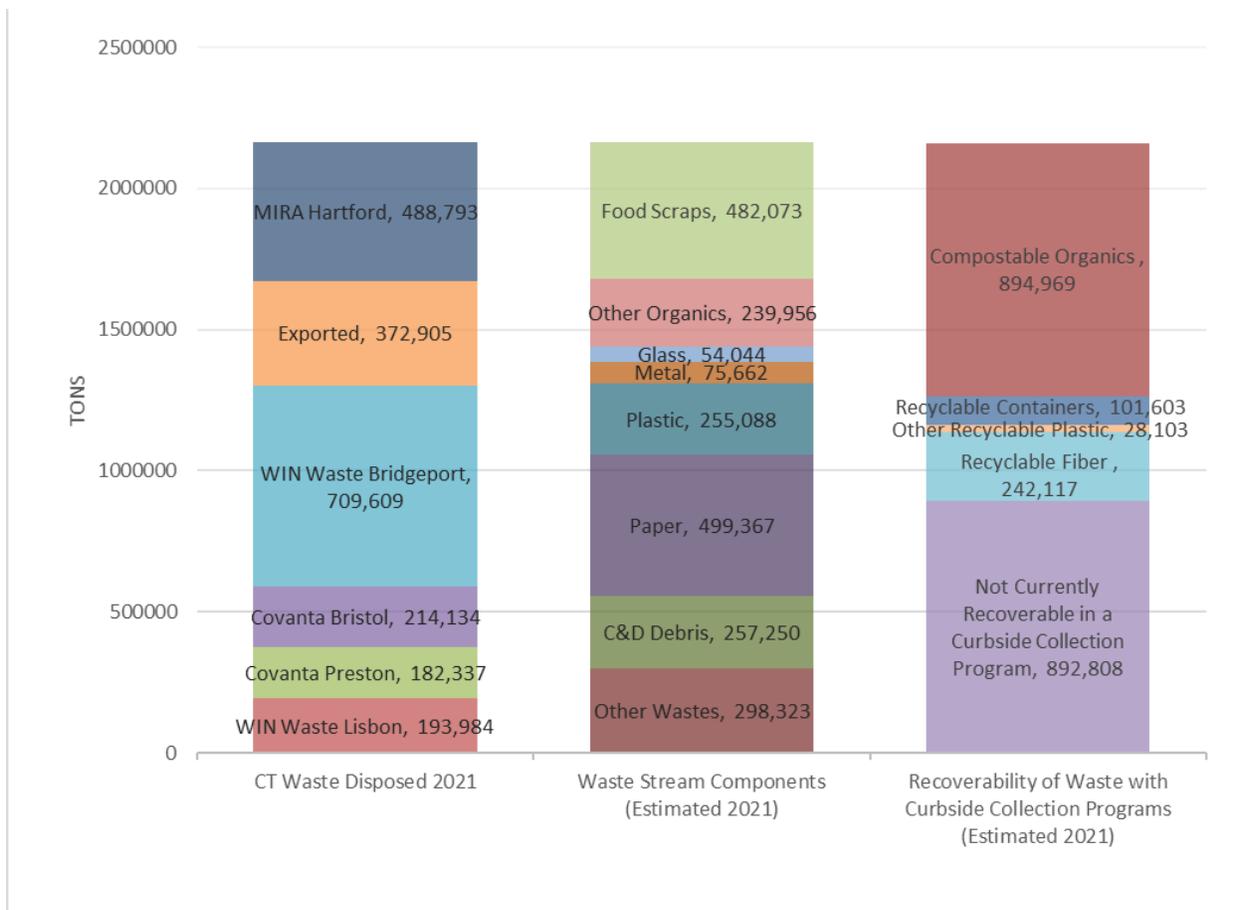


Figure 8: Estimated Composition and Recoverability of 2021 MSW Disposal Stream.

Strategy 1: Extended Producer Responsibility (EPR) for Packaging – 190,000 TPY of MSW Diversion by 2027

Product stewardship programs place the financial and management responsibility for post-consumer materials on the producers of the materials, rather than on government or consumers. By shifting responsibility in this way, successful EPR programs ensure that producers are incentivized to design their products to minimize the costs of end-of-life management and maximize the value of the material once collected, while also seeking to minimize costs through economies of scale, product design, and other market forces. EPR programs can also work to ensure effective investment in the recovery of materials that can be hazardous, unsafe, or difficult to dispose of in the regular MSW stream.

Table 3: Implementation and Outcomes of Connecticut EPR Programs Enacted to Date.

Product	Background	Implementation & Outcomes
Electronics	Legislation enacted 2007; program start 2011.	As of 2019, municipalities saved over \$6 million in avoided e-waste disposal fees and recycled 68,500 tons of unwanted electronics. ²⁷
Paint	Legislation enacted 2011; program start 2013.	Collection of residential latex and oil-based paints managed by the non-profit stewardship organization, PaintCare, Inc. To date, 3.3 million gallons of post-consumer paint have been collected through the program. ²⁸
Mattresses	Legislation enacted 2013; program start 2015.	The Mattress Recycling Council's Bye Bye Mattress program has collected 1.2 million mattresses since 2015.
Mercury Thermostats	Legislation enacted 2012; program start 2014.	Recovery and recycling of mercury thermostats are managed by the Thermostat Recycling Corporation (TRC). To date, over 30,000 mercury thermostats have been diverted from solid waste. ²⁹
Gas Cylinders	Legislation enacted 2022.	Currently planning for implementation.

Over the past 15 years, Connecticut has been a leader in product stewardship programs, enacting EPR laws for electronics, paint, mattresses, and mercury thermostats, detailed in Table 10, above.³⁰ The 2016 CMMS called for developing new product stewardship programs, including consumer packaging, and regional/inter-state programs. Since the 2016 CMMS was finalized, the benefits of adopting a stewardship program for consumer packaging have only become clearer. Under a packaging EPR program, manufacturers would assume responsibility for paper and packaging material currently collected at the curbside or at transfer stations. As of 2022, four states – Maine, Oregon, Colorado, and California – have enacted laws enabling packaging EPR.

A packaging EPR program would align well with the statutory waste hierarchy. Improvements in packaging design could result in smaller/less packaging (source reduction), more reusable packaging, or more recyclable packaging. Packaging EPR programs also allow for more coordinated and targeted investment in recycling systems, improving technology to better recover already recyclable items or recycle materials that were previously not able to be recovered at material recovery facilities (MRFs).

Complementary to Packaging EPR programs are post-consumer recycled (PCR) content standards. PCR content standards refer to setting goals for the amount of recycled material that is used in the manufacture of new products. Special Act 21-9 required DEEP to create recommendations for recycled content requirements and for multi-state coordination on the

²⁷ See <https://portal.ct.gov/-/media/DEEP/E-waste/2019AnnualReport.pdf>.

²⁸ See <https://www.paintcare.org/states/connecticut/>.

²⁹ See <https://thermostat-recycle.org/program-info/state-reports/>.

³⁰ Most recently, in 2022, Connecticut became the first state in the nation to pass an EPR law for gas cylinders. This law obligates manufacturers of certain gas cylinders to establish and finance a collection and recycling program for these gas cylinders generated in Connecticut. There are also efforts underway to establish a stewardship organization for the state's bottle redemption program.

development of recycled content standards.³¹ To that end, DEEP has participated in a working group created jointly by [NERC](#) and [NEWMOA](#) to develop model PCR content standards legislation for plastic products and packaging. The model legislation was released in August 2022.³²

More and more companies are looking to improve environmental outcomes and reduce their carbon footprints. Using PCR content in the manufacture of new products has been identified by some multi-national companies as a vital strategy to accomplish such goals. Some of those companies have even set their own goals for the use of PCR content in new products.³³ Establishing PCR content standards in Connecticut law will send a market signal that will amplify the demand from major companies and benefit commodity prices.³⁴

In the 2022 legislative session, DEEP supported the introduction of Senate Bill No. 115 to establish a Packaging EPR program in Connecticut. This proposed legislation would have required brand owners to submit a plan to DEEP for the collection, transportation, and recycling of their packaging. The bill incentivized reuse and greater recyclability through eco modulation, a financing mechanism which favors environmentally beneficial packaging and source reduction. The bill was similar to laws passed in Colorado and California and others proposed in many other states, including New York. Packaging EPR is commonplace in Europe and Canada and has demonstrated increased recycling rates, reduced contamination in recycling streams, and significant savings for municipalities.

A recent study from Columbia University has provided strong empirical evidence that implementation of packaging EPR will have minimal, if any, impact on consumer prices due to the small incremental cost per product.³⁵ This study refutes a model from York University widely cited in the 2022 legislative session which claims that consumer prices would increase consumer product spending by \$700 - \$900 per year for a family of four.³⁶

In sum, DEEP estimates that Packaging EPR would save municipalities an estimated \$50 million in recycling expenses and reduce Connecticut's "self-sufficiency" deficit by up to 190,000 tons annually by 2028 when the program is fully implemented.³⁷

³¹ See <https://www.cga.ct.gov/2021/ACT/SA/PDF/2021SA-00009-R00SB-00928-SA.PDF>.

³² See <https://nerc.org/documents/Model-Minimum-Recycled-Content-in-Plastics-Legislation.pdf>.

³³ E.g., see <https://www.pepsico.com/our-stories/press-release/pepsico-commits-to-100-recycled-plastic-beverage-bottles-for-its-pepsi-brand-in-9-eu-markets-by-2022>.

³⁴ See https://nerc.org/documents/conferences_presentations/Fall-2022-Conf/Resa-Dimino-Presentation.pdf, Page 20.

³⁵ See <https://academiccommons.columbia.edu/doi/10.7916/n2af-vv87>.

³⁶ See <https://www.bcnys.org/sites/default/files/2021-05/New%20York%20State%20EPR%20Modeling%20White%20Paper.pdf>. Note that this paper suggests a range of \$430 - \$685, though opponents who cited this paper stated a range of \$700 - \$900, which was repeated often during the February 2022 public hearing on Senate Bill No. 115.

³⁷ Assuming a baseline single stream recycling rate of 59%, with 370,000 additional tons of single stream recyclables disposed. A scenario of 80% recycling would yield an additional 190,000 tons of material recycled.

Strategy 2: Accelerate Organics Reuse & Diversion to Achieve up to an additional 185,000 TPY of Food Waste Diverted from the MSW stream by 2030

A substantial portion of the MSW tonnage disposed at WTE facilities or exported to landfills each year consists of organic material that could be reduced, recovered, or diverted cost-effectively. Diversion of food waste and organics has enormous environmental benefits, as diversion from disposal reduces methane emissions from landfills,³⁸ and recovers valuable nutrients and energy from food waste and other organic material. According to EPA's Food Recovery Hierarchy and the state's statutory waste hierarchy, reducing the volume of surplus food generated is the most optimal solution, followed by food donation (donating excess food to soup kitchens, shelters, and community centers); donation of food for animal feed; composting nutrient-rich soil amendment, followed by industrial uses (utilizing anaerobic digestion to convert organics to biogas and other forms of renewable energy. Landfilling and incineration at a WTE are the least preferred solution for disposal of organics.³⁹

The 2015 waste characterization study for Connecticut determined that food waste makes up approximately 500,000 tons, or 22.3%, of total annual MSW tonnage, and "other organics" comprise approximately 11.1%.⁴⁰ Of the total material in the MSW stream that could potentially be recovered through recycling or diversion, organics account for 41%.⁴¹ Connecticut currently hosts a variety of organics processing facilities with permitted capacity of up to 330,000 TPY, which is smaller than the total amount of food waste generated in-state, but dwarfs the amount of food scraps currently recovered from the MSW stream: only about 11,000 TPY were processed at an anaerobic digester facility in 2021 (see Table 1, above).

Since 2020, DEEP has undertaken substantial efforts to accelerate policies and programs for the reuse and diversion of organic material, beginning with an extensive exploration of best practices and solutions for organics diversion as part of the Connecticut Coalition for Sustainable Materials Management (CCSMM) working group process,⁴² and the funding of

Other jurisdictions with Packaging EPR programs have achieved such rates. See British Columbia, Canada, which realized an 81% recycling rate in 2021: https://www2.gov.bc.ca/assets/gov/environment/waste-management/recycling/recycle/paper-package/recyclebc_annual_report_2021.pdf.

³⁸ See <https://www.epa.gov/lmop/basic-information-about-landfill-gas#methane>.

³⁹ See <https://www.epa.gov/sustainable-management-food/food-recovery-hierarchy>.

⁴⁰ Other organics includes branches and stumps, prunings and trimmings, leaves and grass, manures, diapers and sanitary products.

⁴¹ See https://portal.ct.gov/-/media/DEEP/waste_management_and_disposal/Solid_Waste_Management_Plan/CMMSFinal2015MSWCharacterizationStudy.pdf.

⁴² See <https://portal.ct.gov/DEEP-CCSMM>, <https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/CCSMM/Food-scraps-organics> and see Menu of Options at https://portal.ct.gov/-/media/DEEP/waste_management_and_disposal/CCSMM/CCSMM-Options-Menu-Dec-2020-v-2.pdf.

innovative pilots and technical assistance as part of DEEP's new Sustainable Materials Management grant program.⁴³ A successful organics diversion strategy for Connecticut must:

1. Provide education and promotional campaigns to help residents waste less food; and ensure reliable, efficient, and cost-effective means to support food recovery efforts across and throughout Connecticut.
2. Create and expand incentives for all residents and businesses across the state to separate organics "at the source" (i.e., prevent organics from being co-mingled with trash) in a convenient manner with minimal contamination.⁴⁴
3. Ensure reliable, efficient, and cost-effective means for every community to collect source-separated organics and transport them to processing facilities.
4. Catalyze investment in organics processing facilities in Connecticut that have adequate capacity to manage the state's organics tonnage in a cost-effective manner, consistent with the state's waste hierarchy, clean energy, and decarbonization goals.

These four elements of the strategy are interdependent and will be more effective if pursued together. Connecticut's past experience demonstrates this; in 2015, for example, DEEP conducted a request for proposals (RFP) to attract investment in commercial-scale anaerobic digesters with energy offtake agreements, and several projects were awarded contracts. Even with these ratepayer incentives locked in, projects were unable to attract financing and move forward to development because of uncertainties about where their source-separated organic "fuel" would come from. The takeaway is that facility investment is much more likely if source separation incentives and collection programs are in place. DEEP has been undertaking efforts on all four prongs of this strategy, and this CMMS Update highlights additional proposed actions that have the potential to divert up to 40% of food scraps from Connecticut's MSW stream by 2030. In order to achieve that goal, several strategies will need to be employed to ramp up diversion over time.

Provide Education and Assistance to Reduce Wasted Food and Encourage Food Donation

Source reduction for organics has the potential to be a powerful tool for reducing organic tonnage in the MSW stream. As stated above, the EPA Food Recovery Hierarchy places the highest priority on "source reduction" strategies that reduce the amount of food waste generated. These include strategies for households and businesses like making lists before you

⁴³ See <https://portal.ct.gov/DEEP/Business-and-Financial-Assistance/Grants-Financial-Assistance/Sustainable-Materials-Management-Grant-Program>.

⁴⁴ There are federal tax incentives available for Connecticut businesses to make food donation less costly. See https://portal.ct.gov/-/media/DEEP/waste_management_and_disposal/Solid_Waste_Management_Plan/Final_Harvard_Food_Fact_Sheets/FINALTaxIncentivesFactSheetforConnecticutFoodDonationpdf.pdf for more information.

shop, labeling foods in refrigerators, freezing and eating leftovers, optimizing commercial food storage and inventory, employing root-to-stalk cooking, repurposing surplus food, and reducing portion sizes. These measures are highly cost-effective because they do not require food scrap collection and processing infrastructure, and they enable restaurants and other food service businesses to optimize inventory costs in the face of inflation and other economic pressures.

Source reduction strategies can be coupled with food recovery and recycling efforts to have the greatest impact in preventing and diverting wasted food.⁴⁵ Several states are exploring how to help individuals reduce the amount of food waste in their homes and solutions to ensure that food recovery organizations benefit from organic waste bans and mandatory organics recycling laws and that surplus food goes to feed people where possible.⁴⁶ The CCSMM Menu of Options included several recommendations for increasing source reduction and encouraging food donation, including supporting national efforts to standardize date labels⁴⁷ and enacting changes to any state legislation that bars the sale or donation of food past the quality date. Since January 2022, DEEP has contracted with the non-profit Center for Eco-Technology (CET),⁴⁸ to provide free technical assistance to restaurants and other businesses to save money, reduce waste and donate excess food to food banks and food recovery organizations.⁴⁹

Because this food waste reduction strategy is achieved through technical assistance and education and results in waste tonnage *avoided*, it is difficult to quantify the impact. DEEP looks forward to continuing to support these source reduction strategies with a portion of SMM funding, and developing a roadmap of policies, programs, and investments that will allow the full impact of source reduction strategies to be better quantified.

Create Incentives for All Residents and Businesses to “Source Separate” Organics

A key insight of the CCSMM Food Scraps & Organics working group’s efforts is that the cost-effectiveness of investment in organics collection and processing infrastructure is highly dependent on the volume and extent of participation by residents and businesses (“generators”) in separating food scraps at the source of generation. While tip fees at organics processing facilities are significantly lower than tip fees at WTE/RRF facilities, the costs associated with collecting and transporting organics (e.g., the cost of an additional refuse truck route) can exceed those savings if participation does not achieve certain economies of scale.

⁴⁵ See https://refed.org/downloads/Foundation_Action_Paper_Web.pdf.

⁴⁶ See https://chlpi.org/wp-content/uploads/2013/12/Organic-Waste-Bans_FINAL-compressed.pdf.

⁴⁷ See <https://portal.ct.gov/->

/media/DEEP/waste_management_and_disposal/Solid_Waste_Management_Plan/Final_Harvard_Food_Fact_Sheets/FINALDateLabelingFactSheetforConnecticutFoodDonationpdf.pdf?la=en.

⁴⁸ See <https://www.centerforecotechnology.org/ctwasteassistance/>.

⁴⁹ See example CT food recovery organizations at <https://foodrescue.us/site/food-rescue-us-fairfield-county/>, <https://foodrescue.us/site/food-rescue-us-hartford/>, and <https://www.havensharvest.org/about-us>.

Organics separation must be easy, convenient, and affordable for generators. Successful diversion of food scraps and other organic material at scale will require generators to begin separating valuable organic materials from the waste they generate at the source. Achieving these goals requires education about why and how to separate, including how to minimize contamination. And most importantly, generators must be incented to separate organics at scale in order to attract investment in organics collection and processing facilities and ultimately, ensure diversion of a significant portion of food scraps currently disposed of in Connecticut's MSW stream.

When residents are provided with free curbside food scrap collection service, and participation in that service is voluntary, recent experience suggests that about one fourth of food scrap tonnage will be recovered. In January 2022, DEEP sponsored a food scrap co-collection pilot in Meriden through the Department's Save Money and Reduce Trash (SMART) grant program, which tested the feasibility of co-collection of food and household waste across 1,000 households for four months. Participation in the pilot was voluntary and promoted through social media and other marketing efforts. DEEP estimates that the pilot succeeded in diverting approximately 24% of the total food scrap tonnage generated by the 1,000 households in the pilot, totaling over 13 tons. At this rate of participation, the cost of collection per ton diverted may exceed the savings from lower tip fees at an organics processing facility, such that a voluntary residential program would require additional costs to a municipality or resident to maintain. DEEP will continue to monitor diversion rates in voluntary programs being piloted through the SMM grant program.

DEEP expects that **participation in voluntary curbside collection programs improves substantially when coupled with incentives or rewards for diversion.** Some communities have both voluntary food scrap collection programs and unit-based pricing for garbage disposal. Unit-based pricing (UBP) or pay-as-you-throw approaches enable residents to pay for garbage disposal only based on the amount they throw away—measured by weight, or by volume of garbage bags or size of trash cart. UBP programs create a stronger economic incentive for residents to take part in free, voluntary food scrap collection, because they can reduce their waste disposal costs by diverting food scraps. DEEP estimates that the diversion rate in voluntary organics programs increases to 52% in the presence of UBP, generating enough savings to fully cover the cost of organics collection and even generating net savings on MSW disposal costs.

Participation in food scrap diversion programs also increases in the presence of legal diversion requirements, such as a municipal ordinance or state statute designating food waste as recyclable. The impact of these requirements depends on the availability of educational outreach, technical assistance, and enforcement to achieve compliance.

Connecticut has employed this approach to a certain extent at the state-wide level for organics, by passing and then strengthening organics disposal bans that apply to large commercial generators. Connecticut was the first state in the nation to pass a Commercial Organics Recycling Law in 2011. The law currently requires commercial food wholesalers or distributors, industrial food manufacturers or processors, supermarkets, resorts or conference centers that are located twenty miles or less from a source-separated organic material composting facility to send their food waste to such a facility if the commercial entity generates at least a half ton of food waste per week.

Connecticut's commercial generator disposal ban can be strengthened by ensuring that the requirement to divert source-separated organics from a covered commercial facility is triggered by the presence of a transfer station authorized to receive source-separated organic materials located within 20 miles (the law currently only requires diversion when an authorized source-separated organic material composting facility is within 20 miles). This legislative change could lead to the expansion of existing food scrap collection locations or development of new facilities, including allowing for "hub and spoke" models of food waste collection and processing.⁵⁰

Additional actions could be considered to significantly strengthen and increase organics diversion. These include:

Broaden the Scope of the Commercial Organics Recycling Law. Other states in the Northeast, including Rhode Island, Massachusetts, and Vermont, include additional generators that Connecticut does not in their respective organics recycling laws. Rhode Island's law covers institutions such as prisons, hospitals, and higher educational institutions, in addition to commercial and industrial food wholesalers, distributors, and manufacturers. Massachusetts's law covers organic waste from all non-residential generators. According to the Harvard Food Law and Policy Clinic,⁵¹ Connecticut's law currently likely fails to address a large portion of the state's food waste. A 2021 NRDC study estimates that 12% of the food waste sent to landfills from U.S. cities comes from the institutional sector.⁵² Expanding Connecticut's Commercial Organics Recycling Law to cover additional commercial generators, such as the ones that are covered in other Northeast states, could result in an additional 60,000 TPY of food waste being diverted from the MSW stream.

⁵⁰ Envisioned by Appendix H of the General Permit to Construct and Operate a Commercial Facility for the Management of Recyclable Materials and Certain Solid Wastes, created in 2022. See https://portal.ct.gov/-/media/DEEP/Permits_and_Licenses/Waste_General_Permits/CommercialGPApndxHpdf.pdf.

⁵¹ See https://portal.ct.gov/-/media/DEEP/waste_management_and_disposal/CCSMM/Food-Scraps-Organic-Working-Group/Strengthening-CT-Organics-Recycling-Laws-June-2016.pdf.

⁵² See <https://www.nrdc.org/sites/default/files/feeding-city-food-waste-food-need-report.pdf>.

- **Provide access to source separated food scrap collection for all Connecticut residents and businesses.** To achieve an even greater amount of food waste diversion potential, Connecticut could adopt legislation to ensure that all residents and businesses in the state are provided the option of, and access to, source-separated organics collection programs, whether they be at transfer stations or other drop-off points or curbside collection, just like with current recycling programs. The effective date for this requirement should be five years from the date of passage, to provide time for collection programs and infrastructure to be established to handle the increased amount of diversion. This type of future requirement would create an investment signal for haulers and developers for infrastructure and program design, while boosting the volume of organic material diverted—a key to realizing the savings potential for organics programs. A future effective date also allows municipalities time to plan and prepare for this requirement. With adequate support for food scrap collection, processing facilities, education and enforcement, DEEP estimates that a universal access requirement would result in 185,000 tons per year of organics diversion from the waste stream.⁵³

Further alternatives to this strategy would include adding food scraps and food processing residues to the list of designated recyclables, or adopting a strategy similar to Massachusetts and Vermont and implementing a ban on disposal of these items.

⁵³ Food scraps are currently categorized as solid waste, rather than designated recyclable material. Although food scraps are not currently required to be recycled by state law, municipalities have the authority to make provisions for the collection of food scraps through the adoption of a municipal ordinance or other enforceable legal instrument to identify certain solid wastes (including food scraps) to be diverted to recycling facilities.

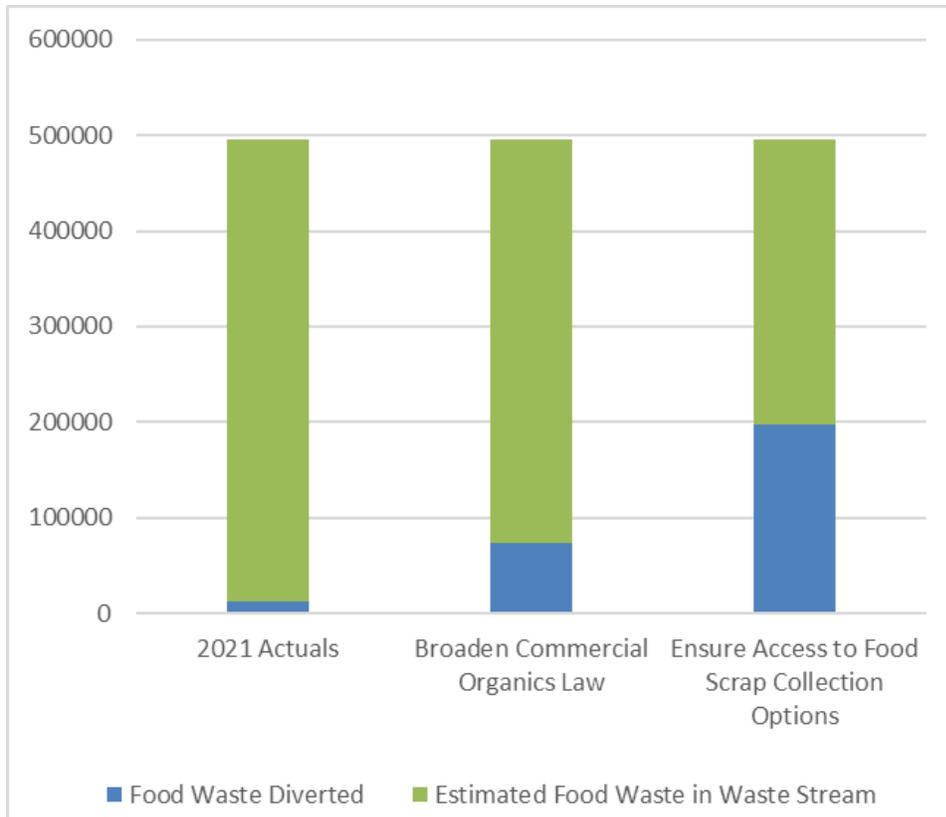


Figure 9: Estimated food waste diversion impacts of implementing Action Items 2 and 3 as described in this section.⁵⁴

Ensure a Reliable, Efficient, and Cost-Effective Means for Collection and Transport of Organics

To facilitate additional source separation and diversion of food waste, residents and businesses need convenient and dependable collection and transportation options for such waste. The CCSMM Food Scraps and Organics Working Group and CCSMM Menu of Options explored a variety of collection options. For communities with curbside MSW collection, there are two principal options:

- Curbside cart-based collection programs** – Cart-based programs provide for collection of source-separated food scraps in dedicated carts or containers, usually with a dedicated collection vehicle or route. These programs can offer a convenient option for diversion of a high percentage of organics from the MSW stream, but participation must be robust to offset the cost of adding a dedicated collection vehicle/route. Successful programs have offset transportation costs for weekly cart-based collection programs by increasing participation/diversion into the organics program high enough to shift regular trash collection to every-other-week.

⁵⁴ Food waste generation is based on 22.3% of 2021 total disposal tonnage. Connecticut’s 2015 statewide waste characterization study indicated that 22.3% of the MSW stream headed for disposal was food waste.

- **Curbside co-collection programs** – Co-collection programs provide convenient, low-cost food scrap collection, by having generators separate their food scraps in designated (color) bags and place them in the same cart as their regular trash for weekly pickup. This approach has the advantage of utilizing the same transportation route/vehicle as regular trash pickup—a significant cost savings. Food scrap bags must be safely sorted at a transfer station or MRF, which could best be done at scale with investment in optical scanning and mechanical sorting equipment.

In communities that do not provide for curbside waste collection, collection of source-separated food scraps can be provided for with a dedicated vessel at a transfer station. Some Connecticut communities are already providing these services, including on a regional basis at transfer stations serving multiple towns. The cost of providing these dedicated collection locations is usually offset by voluntary participation. Composting in backyards, on school grounds, and in community gardens also offers a low- or no-cost means of recycling food scraps in limited volumes, avoiding the transportation costs and emissions associated with other food scrap diversion options.

Additional consideration must be given to food scrap collection and transportation options for multi-family residences, apartments, and condominiums. These properties may require different approaches due to conditions like high resident turnover, limited storage space, and greater opportunity for contamination of shared waste bins.⁵⁵

With the support of Governor Lamont and the General Assembly, DEEP has established a Sustainable Materials Management (SMM) grant program, supported by \$10 million in one-time funding, which will increase to between \$5-\$8 million/year in 2024 or 2025.⁵⁶ This is the largest investment that the state has made to date in cost-effective, sustainable alternatives to waste disposal to incentivize municipalities and regional entities to implement programs that will achieve greater system reliability, environmental sustainability, and fiscal predictability.

In the first round of grant applications, about one quarter of municipalities in the state indicated interest in launching pilot programs as part of this grant program. The SMM Grant Program has made initial grants to fifteen Connecticut municipal entities totaling nearly \$5 million for food scrap collection pilot programs, many of them utilizing the co-collection model

⁵⁵ See <https://portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Recycling/Apartment-Condo-MultiFamily-Recycling>.

⁵⁶ The legislature authorized a recurring funding source for a Sustainable Materials Management Account through redirection of the Class II Renewable Energy Credits that were previously going to the MIRA RRF. DEEP anticipates this will generate \$5-8 million per year, beginning in 2024 or 2025, that can be used for the SMM grant program or other diversion strategies, unless and until new disposal capacity is constructed that will ensure the state's Class II REC market is fully supplied.

demonstrated in the aforementioned pilot program run by the City of Meriden in early 2022.⁵⁷ Note that some municipalities were prevented from participating in the SMM Grant Program because their current municipal disposal contracts do not appear to allow municipalities to contract separately for organics collection, and instead require inclusion of organics in the solid waste stream contracted to a specific facility. The ability to contract separately for designated recyclable items is already allowed by law. Statutory changes (apart from the addition of food scraps and food processing residues to the list of designated recyclables) to allow municipalities to contract separately for organics collection to divert for recycling would remove this potential barrier.

Through these initial grants, DEEP has been able to cover start-up costs for new curbside collection programs, such as education and marketing materials; bags for co-collection programs; and initial program subsidies needed while participation rates are low as programs ramp up. Early results from funded pilots will be carefully analyzed to determine levels of contamination, participation/tonnage diverted, and a host of other factors that will ultimately help identify the best strategy for deploying state funding to scale up collection and transportation programs across the state.

DEEP would be interested in entertaining larger grant amounts as needed to support groups of towns who wish to launch collection programs on a broader scale—such as through Regional Waste Authorities or councils of governments; incent haulers to provide collection programs through a performance-based grant; and support capital investment in mechanical sorting and other organics processing equipment needed to increase the volume of food waste tonnage diverted and recovered. These types of grants are critical for attracting private investment in organics processing facilities, because the availability of source-separated organic feedstock is a primary barrier to development of such facilities. Funding for larger grant amounts could come from an expanded Solid Waste Assessment (discussed in Section IV below).

Catalyze Strategic Investment in Organics Processing Facilities

Connecticut has several facilities in operation that are capable of processing food scraps and other organics (see Table 4 below). Smart Feed Tech, established in Berlin in 2022, is the newest facility, with permitted capacity to accept up to 450 tons/day (TPD) of food waste for recycling into an animal feed supplement. Quantum BioPower, located in Southington, is an anaerobic digester capable of processing up to 360 tons/day (TPD) of food waste (including food waste in packaging) into a compost product, and biogas that is converted into electricity onsite.

⁵⁷ The Meriden pilot was a four-month, 1,000 household test to prove the feasibility of co-collection of food and household waste and the ease of use for residents; the pilot diverted over 13 tons of food scraps from the waste stream. Meriden households used two special bags during their pilot, one bag for food scraps and another bag for trash. Both bags were collected from the same bin, in a process called co-collection. The bags were separated by type, and the food scrap bags were transported to Quantum Biopower in Southington, where the organic waste was turned into renewable energy (biogas). For more information on the Meriden pilot, see <https://www.ctpublic.org/2022-06-23/meriden-pilot-project-shows-promising-results-as-connecticut-finds-ways-to-recycle-food-waste>.

In aggregate, facilities in operation have an estimated permitted capacity to accept up to 328,677 TPY of food waste, which is only about two-thirds of the total food waste in the MSW stream, but far exceeds the roughly 11,000 TPY of Connecticut-generated food waste that is currently diverted to Connecticut anaerobic digesters. It is safe to say that available organics processing capacity is not a limiting factor for organics diversion in the near-term. In the medium-term, as source separation and collection efforts increase, this existing capacity may—or may not—be sufficient to keep up with increased food scrap diversion.

Table 4: Connecticut Facilities Currently in Operation, Accepting Food Scraps and Other Organics.⁵⁸

Facility Name Location, (Operation Date)	Facility Type	Permitted Total Capacity	Est. Permitted Capacity for Food Waste (TPY) ⁵⁹	Feedstock
Smart Feed Tech Berlin, CT (2022)	Animal Feed	Phase 1: 100 TPD Phase 2: 450 TPD;	Phase 2: 159,860 TPY	Food scraps and food processing residue.
Quantum BioPower Southing-ton, CT (2016)	Anaerobic Digester	360 TPD	112,320 TPY	Packaged and unpackaged food waste; food processing residue; liquid beverages; fats, oils, and grease.
Fort Hill Farm AgGrid, LLC Thompson, CT	On-Farm Anaerobic Digester	31,300 TPY	17,840 –20,032 TPY	Off-site food scraps; food processing residue, fats, oils, and grease; and soiled or unrecyclable paper. Manure; bedding; spilled feed or feed waste; and water used in the neighboring dairy farm operation.
WeCare Denali New England Ellington, CT	Outdoor Turned Windrow	43,500 TPY	6,000 TPY	Food waste, leaves, mixed yard waste, ground clean wood, paper mill sludge/ fiber, drinking water treatment residuals, vegetable slurry.
New Milford Farms New Milford, CT	Indoor turned windrow with forced aeration	151,865 TPY	53,865 TPY	Food processing waste, yard and wood waste, livestock manures and bedding, food from restaurant and meal preparation establishments, hydrolyzed plant protein from on-site landfill, compostable plastics & coatings.

⁵⁸ See <https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/Organics-Recycling/Food-Residual-Composting-Facilities> for additional facilities.

⁵⁹ This estimated number is a fraction of the total capacity and represents facilities accepting exclusively food waste under terms that may authorize additional materials.

While *permitted* to receive a range of organic materials, the facilities in Table 4 may require or prefer certain types of food waste for optimal processing, which may limit their actual capacity to receive food scraps from certain sources, or that do not meet certain specifications. In addition, some facilities that are authorized to take other types of organic waste (such as organic materials generated on-farm) may not need to or choose to accept food waste for a given time period. More engagement with these facilities' specifications is needed to understand the true amount of infrastructure capacity needed for organics processing in the state.

Conclusion

In summary, a significant portion of Connecticut's MSW tonnage—approximately 500,000 TPY—is organic food waste material that could be diverted from disposal. Source reduction strategies that emphasize food waste reduction, food donation and recovery are nascent, and could have a bigger impact. The State has a significant amount of infrastructure in operation that is permitted to accept food scraps (i.e., up to 330,000 TPY in permitted capacity), but more detailed analysis will be needed to determine how much of that permitted capacity is actually available and viable to process organics in the MSW stream. There are many tools available to expand investment in organics processing facilities by reducing development costs and increasing revenue for byproducts of anaerobic digestion—streamlining permitting; brownfield redevelopment grants to unlock suitable sites; and energy offtake agreements, including for emerging fuels such as renewable natural gas and sustainable aviation fuel.

The biggest challenge is providing access to convenient, affordable food scrap collection, and incenting residents and businesses to participate in collection programs at scale. The components of an organics diversion strategy, discussed above, are summarized in Table 5. They demonstrate that Connecticut has the potential to divert up to an additional 185,000 TPY by 2030 by implementing more accelerated incentives and policies for source separation and collection of food scraps—the key to attracting investment in organics processing facilities in the State.

Table 5: Basic and Advanced Organics Strategies and Outcomes.

	Basic Organics Strategy	Accelerated Organics Strategy
Source Reduction	Continued SMM funding for free technical assistance for businesses	Adopt and implement a CT Food Recovery Road Map
Incent Residents & Businesses to “Source Separate” Organics	Expand list of covered entities in Commercial Organics Law	Provide universal access to source separated food scrap collection for all residents and businesses.
Organics Collection	Continue to fund SMM grants for municipalities for food waste collection pilots (including transfer station drop-off); encourage adoption of permanent programs.	Scale up SMM grants to support permanent municipal food waste collection programs.
Investment in Organics Processing Facilities	Utilize existing infrastructure.	Strategically site new infrastructure.
Additional Food scraps diverted by 2030	12%, or 61,167 tons	37%, or 185,084 tons
Additional food scraps as a fraction of total MSW diverted by 2030	2.9%	6.3%

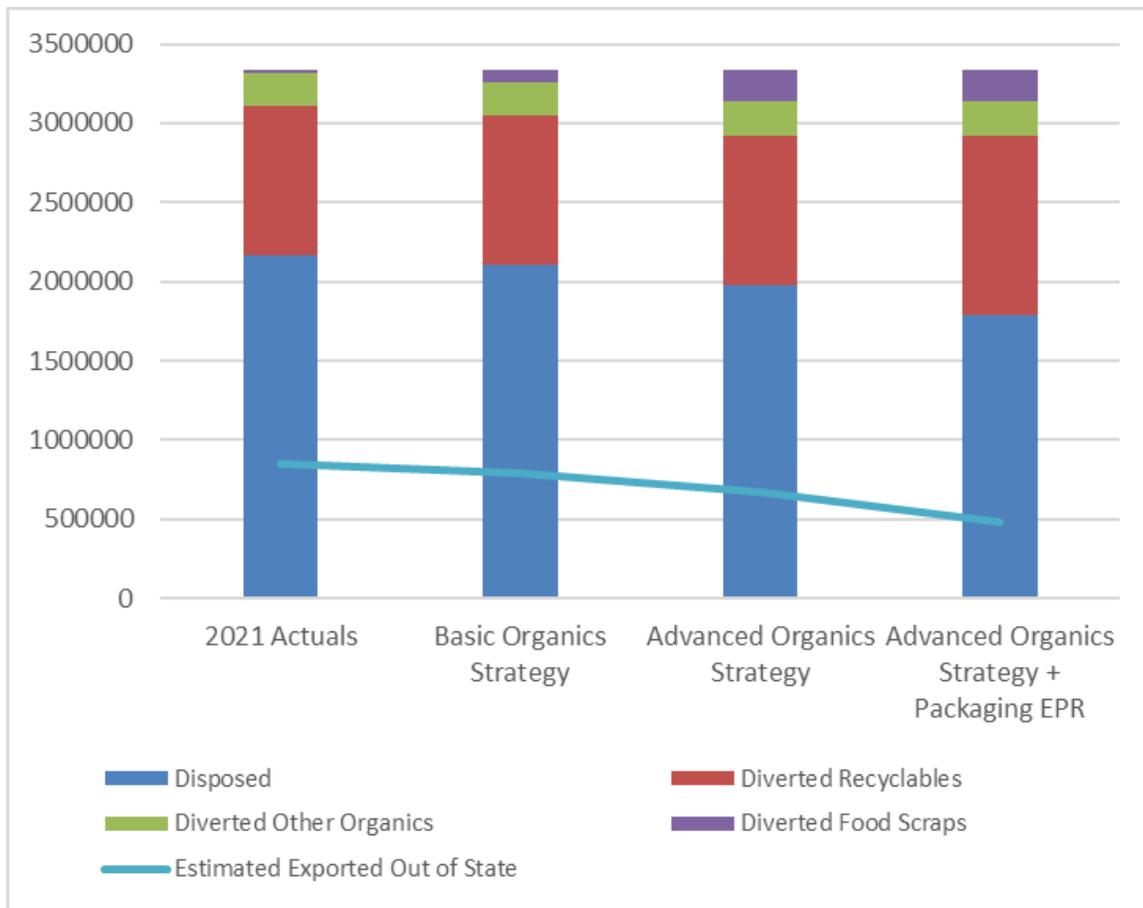


Figure 10: Impact of Packaging EPR and Organics Diversion Strategies on Self-Sufficiency.

Other Strategies

In summary, with the closure of the MIRA facility and a trend of increasing out-of-state export in recent years, Connecticut now has a “self-sufficiency deficit,” with approximately 860,000 of the state’s MSW tonnage being exported out-of-state annually. As discussed above, implementation of packaging EPR will reduce that deficit by 190,000 TPY by 2027 if legislation is enacted in 2023 to authorize such a system. Organics diversion also has great potential to reduce the deficit. Accelerating organics diversion—through food waste reduction; creating incentives for participation in organics programs, coupled with expansion of convenient, reliable waste diversion services—has the potential to divert another 185,000 TPY of organic material currently in the MSW stream, reducing the deficit to 485,000 TPY by 2030.

Alternatively, it is possible to further reduce, or even potentially eliminate, the self-sufficiency deficit with additional diversion strategies. The CCSMM Menu of Options highlighted dozens of programs and measures that could be implemented by DEEP, by the General Assembly and by

municipal leaders, to expand source reduction and diversion, from curbside textile recycling to organics diversion in schools.⁶⁰

Some of the options highlighted in the menu have since been adopted—such as the **legislation modernizing Connecticut’s beverage container redemption program** (i.e., the Bottle Bill) that was enacted in 2021. Public Act 21-58 expanded the types of containers that will be covered by the redemption program, increased the redemption value for covered containers to 10 cents, and created a path for development of a stewardship organization to centrally manage the container redemption program. Connecticut’s redemption rate – that is, the percentage of containers eligible for redemption by consumers that are actually redeemed – has hovered around 50% for the past several years.⁶¹ Other states that have redemption values above 5 cents realize redemption rates of 80-90%.⁶² DEEP will be monitoring the bottle bill reform implementation closely to determine how much the program contributes to additional diversion of recyclables from the MSW stream.

Other programs highlighted in the CCSMM Menu of Options have a high potential to increase MSW reduction, but an uncertain path to implementation. Among these strategies, unit-based pricing (UBP) programs stand out as having the greatest potential impact, while generating cost savings for residents and municipalities.

UBP programs change the way that residents pay for waste collection, from a flat charge or imbedded component of the property tax bill, to a fee based on the volume of MSW the resident throws away (similar to how other utility services are billed). UBP creates a direct economic incentive for residents to change their behavior--to recycle more and to generate less waste to be disposed--and a sustainable revenue structure for municipal materials management costs. UBP programs also increase the effectiveness of other reuse, recycling and other diversion programs, by incenting residents to choose diversion over disposal where possible. Participation in curbside food waste collection programs, EPR programs, and recycling programs is higher in communities with UBP. Effective UBP models include a minimum cost that covers collection (fixed) and disposal (variable) with a pricing scale that is directly related to container or bag sizing.

Implementation of UBP at the statewide level would achieve an immediate and durable reduction of 44% in MSW tonnage and would more than eliminate the state’s “self-sufficiency deficit,” obviating the need to build new waste disposal infrastructure in the state. In Connecticut, this would result in a residential waste per-capita disposal rate of 350-500 pounds compared to the current state average of 740 pounds per capita. Despite the strong potential for municipal and taxpayer cost savings and a significant reduction in residential waste generation, public opinion about UBP programs has been mixed, and the path towards state-

⁶⁰ See https://portal.ct.gov/-/media/DEEP/waste_management_and_disposal/CCSMM/CCSMM-Options-Menu-Dec-2020-v-2.pdf.

⁶¹ See https://portal.ct.gov/-/media/DEEP/reduce_reuse_recycle/bottles/bottle-bill-data---Dec-2022---thru-Q3-2021.pdf.

⁶² See https://www.bottlebill.org/images/PDF/BottleBill10states_Summary41321.pdf.

wide UBP implementation remains unclear. The benefits of UBP have been actively discussed and debated by many municipalities and in the General Assembly,⁶³ and some communities are adopting elements of UBP in their programs and approaches to materials management.

DEEP will seek comment on this draft CMMS Update on the diversion strategies outlined in this section, and any other concepts that stakeholders may put forward that could better achieve the same, or greater, amounts of diversion and source reduction. Pending consideration of those comments, it is clear that after factoring in the diversion strategies identified in this CMMS Update, the State will need a plan of actions to maintain system capacity, including through the procurement of new/incremental waste disposal capacity, of approximately 485,000 TPY by 2030. This plan is detailed in the subsequent section.

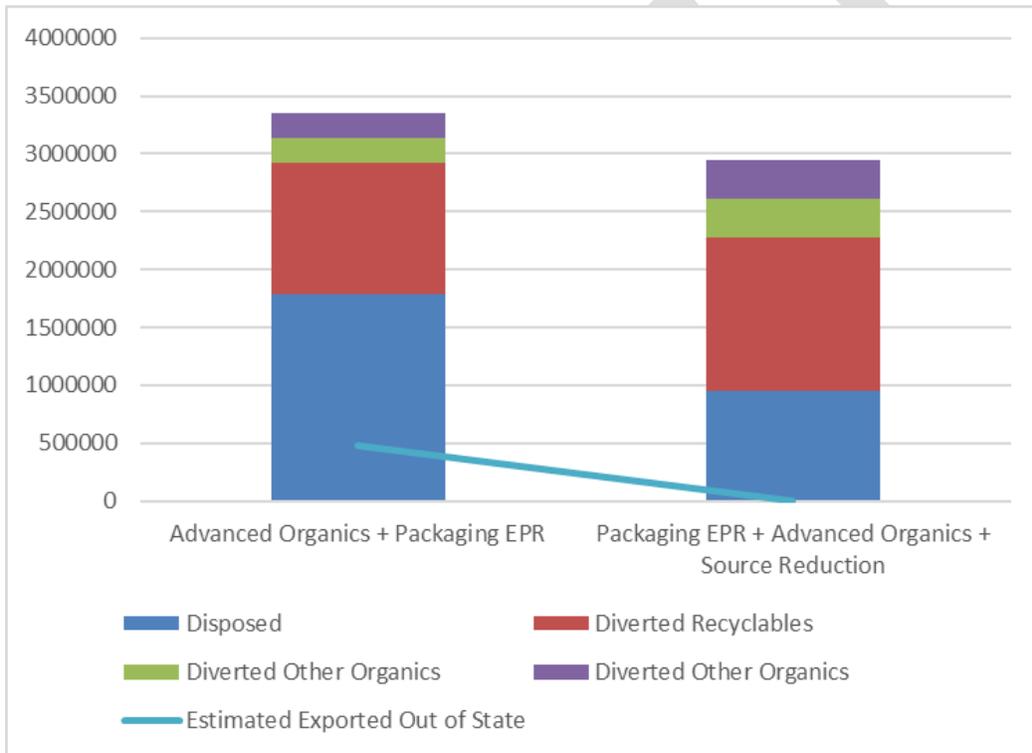


Figure 11: Effect of Implementing Source Reduction (e.g., UBP) on top of Packaging EPR and Organics Diversion Strategies.

⁶³ See agenda for informational forum, available at <https://cga.ct.gov/2021/envdata/oa/pdf/2021OA-00208-R001300ENV-OA.pdf> and recording, available at <https://www.youtube.com/watch?v=Jv8Hnjf8qq0>.

Actions to Achieve Sufficient System Capacity

As stated in the 2016 CMMS, Connecticut should have sufficient in-state capacity for recycling, processing and disposal to manage solid waste, to decrease the carbon footprint associated with transporting waste; provide for greater control and predictability of waste disposal and diversion costs; avoid risks associated with exporting solid waste; and ensure that the burden for management of Connecticut's waste materials is not shifted to neighboring states. This policy of self-sufficiency is critical to ensure that Connecticut is not at the mercy of other states to have reliable locations for solid waste disposal and diversion.

At the same time, the goal of self-sufficiency must also include a commitment to equity and environmental justice. Low-income and communities of color host a disproportionate share of Connecticut's existing waste disposal infrastructure, including two of the four existing waste to energy facilities.⁶⁴ These communities are at greater risk of bearing the localized environmental and health effects of these facilities.

As detailed above, the closure of the MIRA waste-to-energy facility in Hartford has resulted in a deficit in in-state MSW disposal processing capacity of approximately 860,000 tons/year. The diversion strategies discussed in Section III above are expected to reduce annual MSW disposal tonnage by 375,000 tons/year by 2030. This reduces the deficit to 485,000 tons/year, while producing additional source-separated organics tonnage of 185,000 tons per year. Therefore, DEEP concludes that in order to regain self-sufficiency, after implementing the strategies in Section III, the state will need to ensure MSW disposal capacity of approximately 485,000 tons/year. This capacity need assumes continued operation of existing facilities, as well as new capacity that will need to be constructed in the state.

Financing New Waste Disposal Infrastructure

In 2022, the Connecticut General Assembly convened a Solid Waste Management Working Group, (Working Group) pursuant to [Special Act 22-11](#), which has explored various technologies and financing needs for solid waste disposal infrastructure. DEEP has been grateful to be included in the Working Group, and many of the observations in this Section reflect insights and considerations developed as part of DEEP's participation in the Working Group.

Construction of new facilities involves significant upfront capital costs, requiring developers to have greater certainty that the facility will receive adequate revenues from expected sources over the time period needed to recover the upfront capital investment. The majority of the revenue for these facilities—between 60 to 70%—derives from tip fees paid by haulers or municipalities to utilize the site. Municipalities or regional waste authorities play a critical role in providing that certainty of revenues, by entering into long-term MSW tip fee contracts with facility developers. DEEP anticipates that innovative disposal facilities could also include

⁶⁴ See

<https://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=7783574e2cd94d388124b54cdb82a34e>.

infrastructure to enhance separation of the organic fraction from MSW streams, and/or onsite anaerobic digestion, underscoring the benefits of having incentives and collection programs for source-separated organics in place to support the inclusion of organics processing as part of new infrastructure projects.

Conventional RRFs receive revenues from a variety of ancillary sources, including the sale of electricity and electric capacity in regional wholesale energy markets; and the sale of CT Class II Renewable Energy Certificates. The CMMS Update does not prefer the use of utility ratepayer-backed offtake agreements (in the form of power purchase arrangements or contracts for differences tied to energy production) for energy as an exclusive or initial basis for securing investment in RRF facilities. Fixing electric revenues above market rates, in the absence of or in advance of securing long-term tip fee prices from municipal or RWA customers, risks shifting an outsized share of facility investment costs onto electric ratepayers at a time when electric rates are already high. More innovative disposal facilities could incorporate some means of separating recyclable materials and processing organics that could generate additional non-electric revenues. Energy byproducts from anaerobic digestion of organic materials include co-generated electricity, but also renewable natural gas (which could be compressed onsite for use in refuse trucks or other medium- and heavy-duty vehicles), or even sustainable aviation fuel (which may be eligible for production tax credits under the federal Inflation Reduction Act).⁶⁵

Solid Waste Assessment

The cessation of WTE operations at the MIRA RRF also presents an opportunity to rethink the state’s fiscal policy toward waste management. Presently, waste received at a Connecticut WTE facility is assessed a \$1.50/ton fee (called the Solid Waste Assessment) that is deposited in the General Fund.⁶⁶ Construction and demolition (C&D) waste and MSW handled in other ways (including transfer to landfill) is not assessed a fee. This added cost to WTE provides a slight competitive advantage to out-of-state transfer and disposal, which is contrary to the statutory waste hierarchy. Many other states assess a fee for solid waste disposal at the state level, reaching as high as nearly \$13.00/ton (Wisconsin).

State	Rate (\$/ton)	Source
Maine	\$2.00/ ton on all MSW and C&D that is disposed of at in-state landfills	Title 38, §2203-A: Waste handling fees (maine.gov)
North Carolina	\$2.00/ ton on all MSW and C&D debris transferred and disposed in-state and out of state	Solid Waste Disposal Tax NCDOR

⁶⁵ The federal Inflation Reduction Act (IRA) includes new credit of up to \$1.75/gal for qualified “sustainable aviation fuel” produced and sold for two years after 2024.

⁶⁶ Conn. Gen. Stat. Section 22a-232.

Missouri	\$2.11/ ton on all MSW accepted at the landfill or transported out of state for disposal \$1.40/ ton on C&D disposed in-state	Solid Waste Tonnage Fees and Allocations Missouri Department of Natural Resources (mo.gov)
Illinois	\$2.22/ ton on all MSW landfilled in Illinois (variations in fee depending on total cubic yards received from operators)	Landfill Tipping - Fees (illinois.gov)
New Jersey	\$3.00/ ton on MSW and C&D accepted for transfer or disposal in-state or out of state	Connecticut (newmoa.org) NJ Division of Taxation - Recycling Tax (state.nj.us)
Iowa	\$3.25 - 4.75/ ton on MSW landfilled in-state	Iowa – Waste Disposal Surcharge – Institute for Local Self-Reliance (ilsr.org)
Ohio	\$4.75/ ton on MSW \$1.60/ton on C&D Collected at the first facility accepting the waste (transfer or landfill)	Solid Waste Disposal Fees (custhelp.com) State Funding Mechanisms for Solid Waste Disposal and Recycling Programs (epa.gov)
VT	\$6.00/ ton on MSW and C&D accepted at landfills in-state or out of state	SWT-608.pdf (vermont.gov)
Pennsylvania	\$7.25/ton on MSW accepted at landfills and \$2/ton on MSW disposed at resource recovery facilities	MW Management Fees (pa.gov) Pennsylvania – Waste Disposal Surcharges – Institute for Local Self-Reliance (ilsr.org)
West Virginia	\$8.75/ ton on MSW and C&D disposed at West Virginia landfills	SWMB Administration (state.wv.us)
Wisconsin	\$12.99/ ton on MSW disposed at Wisconsin landfills	Environmental Fees for Waste Sent to Wisconsin Landfills

Total actual fees assessed are higher in a number of these states, due to additional fees that are charged by county and/or local governments. Connecticut's \$1.50/ton fee on WTE, which in recent years has applied to as much as 80% of MSW tonnage, is lower than the state-level fees

charged in a number of states.⁶⁷ Other states use these funds for supporting municipal waste diversion efforts, grants, and other environmental programs.⁶⁸

To establish a fee framework that reflects the state's waste management preferences, the solid waste assessment can be amended to be a per-ton fee on all waste (including MSW and C&D waste) that is received at multi-town transfer stations (MTTS) or volume reduction plants (VRPs). There are 18 commercial multi-town transfer stations, and 31 VRPs that would be subject to the fee, which would be paid by the facility operator. Recyclables or waste that is transferred from those facilities to a WTE facility would be exempt from the fee. Assessment of the fee would also achieve a marginal improvement in the economics of recycling, composting, and source reduction versus disposal by WTE and landfilling, strengthening the market signal to municipalities and businesses to choose disposal options consistent with the state's waste hierarchy. Subject to legislative authorization, after covering current-level SWA contributions to the General Fund, this CMMS Update recommends reinvesting the SWA revenues as follows:

- In the near term, distribute SWA revenues through the SMM Grant Program to enable municipalities to scale up organics diversion, recycling, and source reduction measures that reduce the amount of in-state MSW capacity needed.
- In the medium term, utilize SWA revenues to backstop state revenue bonds used to support infrastructure projects that expands in-state MSW capacity, and recycling,

Next Steps

This CMMS Update identifies the following roadmap of initial DEEP actions (January 2023-July 2023) to facilitate diversion as well as investment in new waste disposal infrastructure for the State:

1. Engage and Advocate in the Legislature for Authorization for Key Waste Reforms

The General Assembly will play a decisive role in determining the scale of waste disposal infrastructure needed to regain self-sufficiency, and the tools that DEEP, municipalities, and developers can rely upon to secure investment in new infrastructure. The issuance of this draft CMMS Update, including the data summarized within, is intended to build on the work of the legislature's Solid Waste Task Force to inform the General Assembly about the current state of Connecticut's waste sector. Section III of the CMMS Update identifies two of the most cost-effective diversion strategies--Packing EPR and Accelerated Organics Diversion—that DEEP estimates can reduce the amount of new capacity needed to achieve self-sufficiency from 860,000 TPY to 485,000 TPY.

DEEP will welcome comment on the draft CMMS Update on these proposed diversion strategies, including comment on the efficacy of these strategies. In parallel, the Lamont

⁶⁷ See <https://www.recyclecartons.com/wp-content/uploads/sites/2/2022/08/Disposal-Surcharges.pdf>.

⁶⁸ See <https://ilsr.org/rule/waste-surcharges/>

Administration will introduce legislation in the 2023 legislative session to enable packaging EPR, accelerated organics diversion, and enhancements to the Solid Waste Assessment, as well as direction for DEEP to conduct an RFP for waste disposal infrastructure on behalf of interested municipalities and RWAs. Through the CMMS Update comment period and the legislative session, DEEP will be eager to engage with legislators and stakeholders to advance these diversion strategies, or alternative strategies that can achieve equivalent or greater diversion of materials from the MSW stream. The outcomes of the 2023 legislative session will ultimately inform whether the quantity of waste disposal capacity identified in this CMMS Update—485,000 TPY—is adequate to achieve self-sufficiency, in light of diversion policies and programs authorized.

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2. Provide Assistance to Municipalities and Councils of Governments Interested in Establishing or Joining Regional Waste Authorities

Key to financing and development of new disposal facilities is ensuring that municipalities are positioned to aggregate their buying or bonding power to support infrastructure investment and secure predictable tip fees. In the past, RRFs constructed in the state were publicly financed—in other words, financed and constructed with municipal bonds and multi-year MSW tip fee/service agreements issued on behalf of multiple towns working together as Regional Waste Authorities (RWAs). MIRA’s predecessor, the Connecticut Resources Recovery Authority (CRRRA), was created in 1973 to develop a network of RRFs that could help the state transition away from landfill disposal. As a regional waste authority, CRRRA not only financed, built, and operated the (now MIRA-owned) RRF in Hartford, but it also played a key role in helping other municipalities establish RWAs and develop their own RRFs, assisted with significant planning grants from DEEP. DEEP historically provided planning grants to municipalities to help them establish RWAs, and to CRRRA which provided assistance and facilitation (consistent with the Solid Waste Management Plan) for sister RWAs and municipal groups seeking to develop new RRFs. The RRF in Preston, CT, for example, was built on municipally-owned property and financed with bonds from 12 municipalities/members of the Southeastern Connecticut Regional Resources Recovery Authority (SCRRA), all facilitated with assistance from CRRRA. SCRRA towns also entered into multi-year power purchase agreements for the electricity produced by the facility. After the bonds were repaid, ownership of the facility reverted to Covanta, which still leases the RRF site from SCRRA.⁶⁹

Regaining the facilitation function that CRRRA provided, and helping municipalities join together in RWAs and support new infrastructure development, is an important element of achieving “self-sufficiency”. RWAs provide leverage of scale and greater buying power on behalf of their member towns, to issue bonds; negotiate multi-year MSW service agreements with RWA- or privately-financed disposal facilities. As noted above, there are many ways that the state can provide low-cost financing and other subsidies to support development of new waste disposal facilities, but without municipalities involved in the transaction—ideally as part of RWAs—it is difficult to have assurance that facility owners (or other intermediaries) will extend to municipalities the benefits of those state subsidies in the form of lower or predictable tip fees.

In addition, RWAs can offer a range of services for member towns, including:

- Managing hauler registration and fee collection on behalf of member towns
- Assisting municipalities with filing required reports to DEEP
- Managing public outreach and education programs
- Implementing recycling and diversion programs
- Facilitating household hazardous waste programs

⁶⁹ DEEP CCSMM Regional Waste Authorities 101 webinar, available at https://us06web.zoom.us/rec/play/YIH35ym0q2_T-lp5zGqy7732cigRjvxgUjECI5rBoNWPchY9DYYimlp_BjdGkS-ZODvbYijFfW2HwnU.wy55MDt1eD1bX1R6?autoplay=true.

- Negotiating regional agreements for household hazardous waste, textile, and other recycling programs
- Applying for grants to offset costs for member towns
- Funding recycling coordinators and other services shared by member towns

These types of services are essential to municipalities being able to effectively scale up recycling and organics diversion programs, such as curbside collection. In parallel with the issuance of this draft CMMS for comment, DEEP will seek applications from municipalities or Councils of Governments that have interest in forming RWAs, or joining existing RWAs, to provide small planning grants funded by the Sustainable Materials Management grant program, as well as funding provided for this purpose by the U.S. Environmental Protection Agency (EPA) pursuant to the Infrastructure Investment & Jobs Act (IIJA). These grants can also support existing RWAs that are interested in undertaking planning efforts related to new infrastructure.

3. Initiate a Request for Information for Innovative Materials Management Infrastructure

DEEP is planning to issue a Request for Information (RFI) to solicit comment from interested stakeholders, municipalities, Councils of Governments, solid waste management industry representatives, facility developers, and others regarding the opportunities and needs associated with waste infrastructure development to help address Connecticut's solid waste management challenges and meet the self-sufficiency and capacity goals set in this CMMS Update. DEEP is seeking comment and information on the best approaches to support waste infrastructure development, particularly in alignment with long-term contracts, siting, or complementary programs such as food scrap collection that are under municipal authority and control. DEEP will also seek concept papers from developers for specific technologies or projects, to enable the Department to assess the feasibility, financing needs, site characteristics, risks, environmental impacts and other considerations.

DEEP looks forward to engaging with stakeholders throughout this process. The addition of new MSW disposal and/or organics processing infrastructure will require long-term waste disposal contracts with a critical mass of towns, and possibly additional state support, such as Solid Waste Assessment-backed revenue bonds. In addition, DEEP anticipates policy support and public acceptance of any new infrastructure—especially MSW disposal infrastructure—will require a site that aligns with environmental justice priorities, and assurance that more sustainable approaches (such as unit-based pricing, EPR, recycling, food scrap diversion) have been maximized.

DEEP currently has authority to procure approximately 88,400 MWh, or 10 MW in long-term contracts to purchase electricity and renewable energy certificates (RECs) from Anaerobic Digester (AD) facilities, and authority to procure an additional 10 MWs from AD facilities that are collocated on farms with animal feeding operations. The RFI will help DEEP understand how to best utilize this authority. In addition, the RFI will also seek input on other funding and programmatic supports that can facilitate investment such as: brownfield funding to unlock

sites for infrastructure; federal grants and production tax credits (such as for sustainable aviation fuel); preferred financing structures; revenue bonds that can be backstopped by revenue from the enhanced Solid Waste Assessment.

In sum, these three actions will determine the steps that DEEP can take in the second half of 2023 to begin to close the State's "self-sufficiency" deficit, including scaling up diversion programs (e.g., through a new round of SMM grants) and initiating an RFP for Innovative Materials Management Infrastructure in coordination with or on behalf of interested municipalities and Regional Waste Authorities.

Conclusions

In conclusion, this CMMS Update outlines an achievable path to eliminate the state's self-sufficiency deficit by the end of the decade, through a combination of methods such as extended producer responsibility for packaging and acceleration of organics diversion, to engage the community and promote participation in sustainable alternatives to conventional waste disposal. Additionally, proper planning and infrastructure development is needed to manage remaining MSW tonnage that the state's diversion programs do not address. By working together, government, industry, and citizens can create more predictability and security in waste disposal costs, while advancing a cleaner, healthier, and more sustainable future for all.

Actions Taken Since 2016 (to be interspersed in text boxes throughout the CMMS Update)

DEEP has taken several actions since the release of the 2016 CMMS to meet the goals of that plan and implement diversion strategies.

Connecticut Coalition for Sustainable Materials Management

Recognizing the need for state collaboration with municipal leaders to take bold action in addressing the waste crisis, DEEP joined with over 100 municipalities to form the Connecticut Coalition for Sustainable Materials Management (CCSMM) to explore ways to reduce the amount of waste that is generated in our state, improve reuse, recycling, organics collection, support EPR legislation, and consider other innovative solutions. CCSMM began in fall 2020 with a commitment to sharing experiences and lessons learned, engaging market participants and local stakeholders to solicit input and proposed waste reduction solutions, seeking creative means to fund solutions, and identifying and evaluating a menu of options to collectively make progress toward waste reduction goals. In December 2020, CCSMM released a [Menu of Options](#) – an exhaustive list of potential legislative, department, and municipal actions identified and

discussed through the CCSMM process. Many of those actions have already been implemented. More information about the CCSMM is available at <https://portal.ct.gov/DEEP-CCSMM>.

Permit Streamlining for Food Waste and Organics

DEEP has prioritized improving permitting processes for solid waste facilities that promote diversion of recyclable or compostable material.

Facilities receiving food waste generated elsewhere require a solid waste permit. There are several current authorization pathways for food waste management for municipal, commercial or private facilities to receive, transfer and process food waste.⁷⁰ Depackaging of food waste and satellite collection locations are also authorized under certain conditions.

On-farm Anaerobic Digestion

There are streamlined authorization pathways for the management of food waste through collection and transfer or receipt and processing/composting of organic materials that apply to on-farm AD of food waste and manure. A facility is exempt from solid waste permitting if the facility is co-located with animal feeding operations, processes no less than 50% farm-generated organic waste and receives less than 40% food scraps, food processing residuals and soiled or unrecyclable paper for feedstock.⁷¹ DEEP has developed a [fact sheet](#) for developers and farmers interested in permitting and constructing on-farm AD facilities.

Expansion of Commercial Organics Law

Getting large commercial generators of organic waste—cafeterias, food manufacturers, and large restaurants—to divert their organic material to organic processing facilities frees up capacity at WTEs and provides opportunities for renewable energy production at AD facilities. According to the recently strengthened organics diversion law, as of January 1, 2022, commercial generators are required to divert their organic material if there is an organics processing facility within 20 miles of the generator, and if the generator produces more than 1/2 ton per week of organic material.⁷²

Food Waste (Appendix H) in Commercial General Permit

Commercial or private facilities can now register for small-scale collection, transfer, and depackaging of food waste under the General Permit for the Construction and Operation of a Commercial Facility for the Management of Recyclable Materials and Certain Solid Wastes,

⁷⁰ See <https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/Organics-Recycling/Current-Permit-Authorization-Pathways-for-Food-Waste-Management>.

⁷¹ Conn. Gen. Stat. 22a-208cc.

⁷² CT Public Act 21-16.

Appendix H.⁷³ Large-scale food waste collection locations are authorized under an individual solid waste facility permit.

Demo Projects for Addition of Food Scraps into Leaf Composting

Food scrap composting may be authorized at municipal, commercial or private leaf composting locations with an applicable registration of a leaf composting facility and demonstration project authorization. There are approximately 100 active leaf composting facilities in Connecticut.⁷⁴ Of the existing leaf composting facilities, only four currently accept food scraps through demonstration project authorizations. Those four projects are located in Mansfield, Litchfield, Ridgefield and West Haven.⁷⁵

Demo Projects for co-collection and sorting of bagged MSW and Food Scraps

Municipalities can receive temporary authorization to pilot co-collection and sorting of bagged MSW and food scraps. Co-collection programs use two special bags, one bag for food scraps and another bag for trash. Both bags are collected from the same bin. The bags are separated by type, and the food scrap bags are transported to a food scrap recycling facility. Meriden was the first town to take this approach with the help of a DEEP SMART grant in early 2022. More recently, fifteen towns were awarded grants in October 2022 through the SMM Grant Program to implement similar programs.

Bottle Bill

With the passage of [Public Act 21-58, An Act Concerning Solid Waste Management](#), Connecticut is undergoing the most significant transformation of its beverage container redemption program (also known as the Bottle Bill) since the program was first implemented in 1980. The Bottle Bill places a deposit on a container at the time of purchase and returns that deposit to the consumer when the empty bottle is returned. The containers may be returned to their place of purchase or to other container redemption centers. While the Bottle Bill is a critical part of Connecticut's recycling and litter-reduction program, present redemption rates average about 50%.⁷⁶ Other states who have modernized their infrastructure and laws have achieved redemption rates approaching upwards of 90%. The Bottle Bill provides source-separated material that can be readily recycled into new containers or other products.

³² See <https://portal.ct.gov/DEEP/Permits-and-Licenses/Waste-and-Materials-Management-Permits-and-General-Permits#CommercialGP>

⁷⁴ See <https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/Organics-Recycling/Active-Leaf-Composting-Facilities>

⁷⁵ See <https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/Organics-Recycling/Food-Residual-Composting-Facilities>

⁷⁶ https://portal.ct.gov/-/media/DEEP/reduce_reuse_recycle/bottles/bottle-bill-data---Dec-2022---thru-Q3-2021.pdf.

The most significant changes in Public Act 21-58 included 1) an increase in the handling fee paid to retailers and operators of redemption centers;⁷⁷ 2) an expansion of the types of beverages covered to include items such as sports drinks, juices, teas, coffee drinks, and more beginning on January 1, 2023; and 3) an increase in the deposit amount from \$0.05 to \$0.10 beginning on January 1, 2024.

Product Stewardship

Over the past 15 years, Connecticut has been a leader in product stewardship programs, enacting extended producer responsibility (EPR) laws for electronics, paint, mattresses, and mercury thermostats. Then, in 2022, Connecticut became the first state in the nation to pass an EPR law for gas cylinders. This law obligates manufacturers of certain gas cylinders to establish and finance a collection and recycling program for these gas cylinders generated in Connecticut. Manufacturers must submit a plan to DEEP detailing how they intend to provide for the free and convenient statewide collection of gas cylinders.

⁷⁷ The handling fee is an amount paid to retailers and distributors on a per unit basis for collecting bottles, sorting them, and returning them to the distributor.



portal.ct.gov/DEEP