

Hi DEEP CCSMM Team,

In response to DEEP's request for comment and solutions to the state's materials management crisis TOMRA is submitting our thoughts in the attached.

Feel free to reach out with any questions.

Thank you,
Mike

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Comments for The Connecticut Coalition for Sustainable Materials Management (CCSMM)
An initiative of the Department of Energy & Environmental Protection (DEEP)

November 24, 2020

Via Email: DEEP.RecyclingProgram@ct.gov

To the attention of the CCSMM Co-chairs:

- Katie Dykes, DEEP Commissioner
- Laura Francis, First Selectman, Durham
- Matt Knickerbocker, First Selectman, Bethel

Please note that we have addressed the [Questions for Response](#) in 2 sections below. The first section focuses on improvements to Connecticut's Beverage Container Deposit and Redemption Law and the second section focuses on improvements throughout the curbside collection and recycling system. Both sections address focus areas #3 EPR and #4 Increased Recycling, more specifically:

- **#3 Extended Producer Responsibility (EPR):** Packaging
- **#4 Increased Recycling:** Improve the quantity of material collected; specific source-separated programs including glass; measures to improve the quality of recycled materials

Section 1: Comments addressing improvements to Connecticut's Beverage Container Deposit and Redemption Law

1. Are there any model programs, best practices, or innovative concepts that the Coalition should consider, that could provide a scalable solution in any of the Focus Areas, listed above? The Coalition is interested in hearing about approaches that are conceptual, implemented on a pilot basis, or implemented at scale, whether here in Connecticut or in other jurisdictions in the United States or other countries.

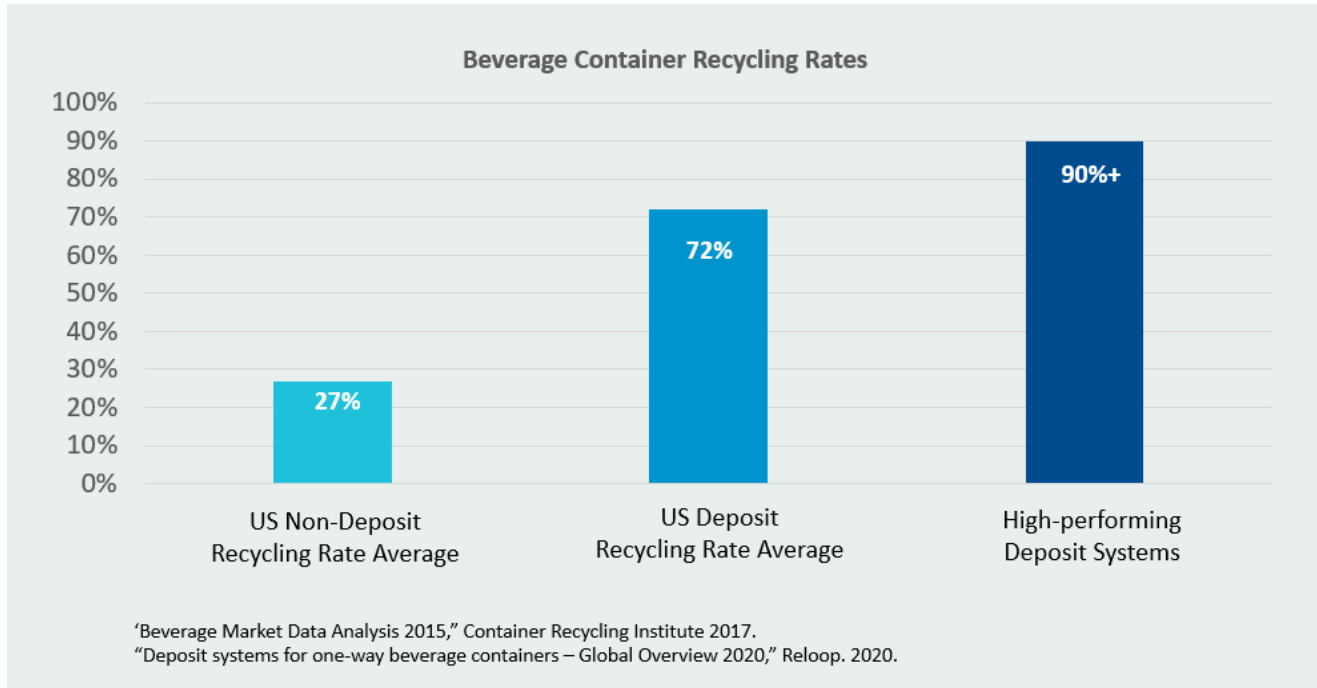
Given CCSMM's goal to "work together for a modern, cost-effective and environmentally sustainable materials management system", DEEP has hosted a discussion about updating Connecticut's Beverage Container Deposit and Redemption Law (also known as the "bottle bill"). TOMRA works in nearly every region with such a deposit program in the world so we wanted to inform the conversation with data on what high performing deposit systems can deliver.

Background Information on Connecticut's Deposit System

Since 1980 Connecticut (along with ten other US states) has incentivized the public to return beverage cans and bottles to be recycled rather than littered or disposed by placing a five cent deposit on the sale of beverage containers that is repaid when consumers return them. To return containers and recoup their deposit money, residents can redeem at any beverage retailer by law (as long as the retailer sells that brand) or "redemption centers", which are private businesses that accept all deposit containers. Redemption providers are paid a "handling fee" for their redemption and storage services. The handling fee in Connecticut is 1.5¢ for beer and 2¢ for all other deposit beverages.

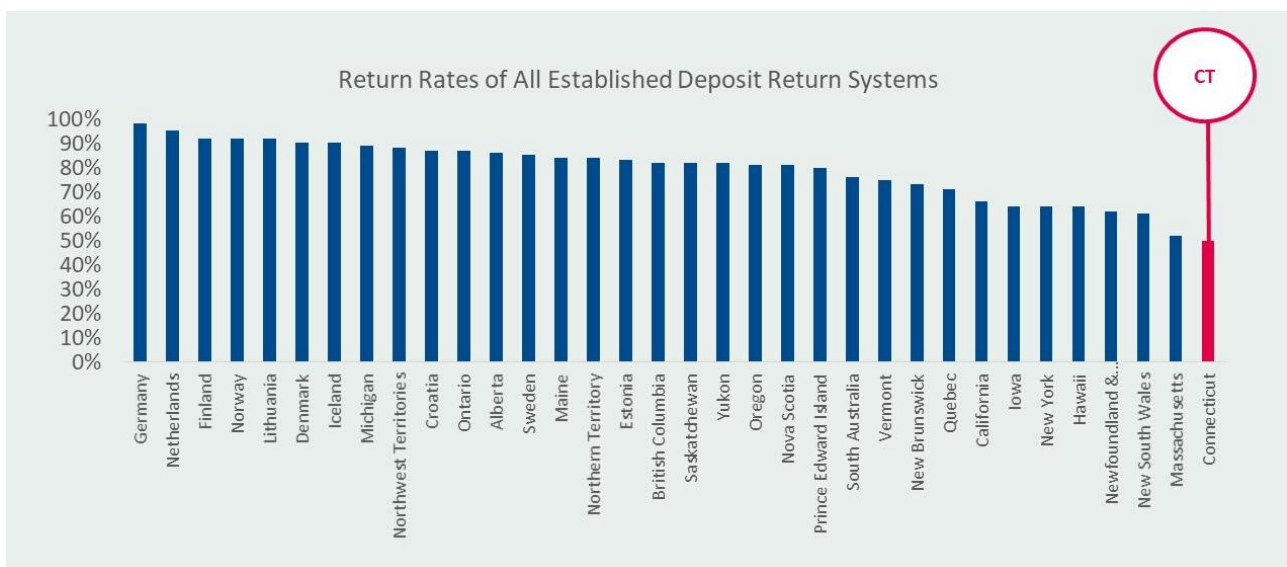
The Potential Opportunities for Greater Waste Diversion

Deposit systems are known for effectively incentivizing recycling. The average recycling rates for containers without a deposit is 27% vs 72% for deposit containers. However there are a number of deposit return systems around the world that achieve 90% recovery rates for recycling or higher – what we call high-performing deposit return systems (DRS).



Connecticut’s deposit system is not reaching its full potential in terms of waste diversion, litter reduction and municipal cost savings.

The return rate or “redemption rate” is one of the key metrics that defines the success of a deposit program as it calculates the percentage of beverage containers with a deposit that are returned for recycling. Connecticut has the lowest redemption rate of all established container deposit systems in the world (50%, tied with Massachusetts).¹



¹ “Deposit Systems for One Way Beverage Containers,” Reloop. 2018. <https://reloopplatform.eu/wp-content/uploads/2018/05/BOOK-Deposit-Global-27-APR2018.pdf>. And BottleBill.org

This illustrates that Connecticut has the policy framework to achieve 90%+ diversion of cans and bottles but misses a few key elements that deliver high performance.

The four principles that high-performing deposit systems share in common

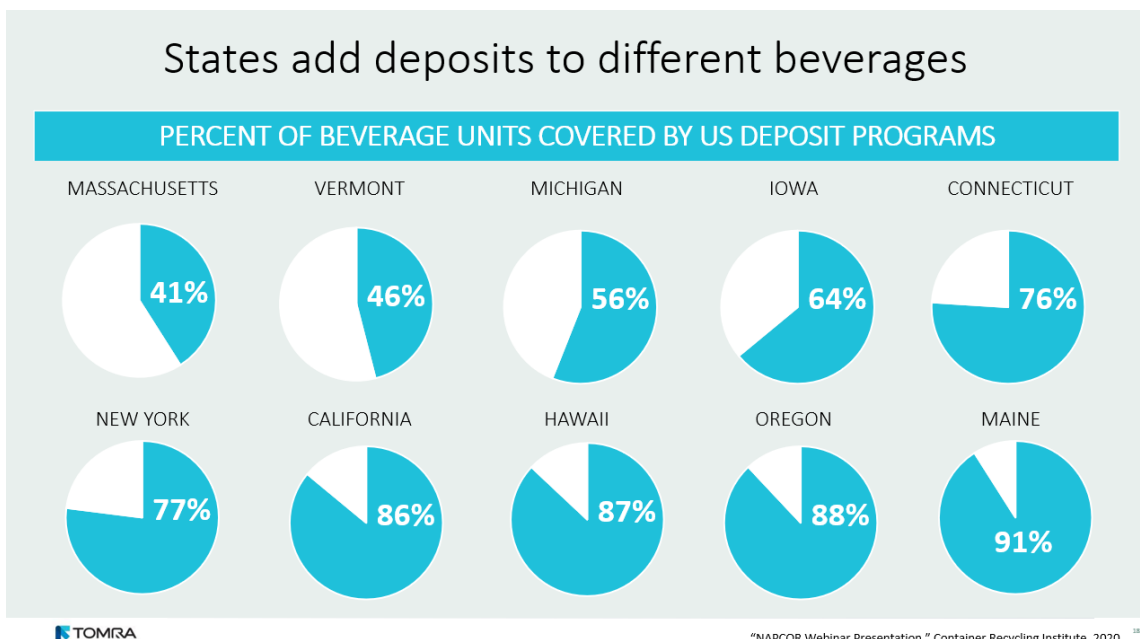
To better understand the success factors of deposit systems that reach 90% redemption rates and above, TOMRA reviewed the results of the 40+ deposit markets where we operate and our own experience from the field. We were looking for programs that maximized environmental benefits at the lowest possible cost. What we found was that high-performing systems prioritize four principles:

High-performing deposit return systems prioritize four principles

PERFORMANCE	CONVENIENCE	PRODUCER RESPONSIBILITY	SYSTEM INTEGRITY
<p>A collection target for all beverages plus a meaningful deposit delivers strong results.</p>	<p>The redemption system is easy, accessible and fair for all users.</p>	<p>Producers finance and invest in the system using the unredeemed deposits and commodity revenues.</p>	<p>Trust is built into the system through transparent management, a data-driven clearinghouse, and innovative technology.</p>

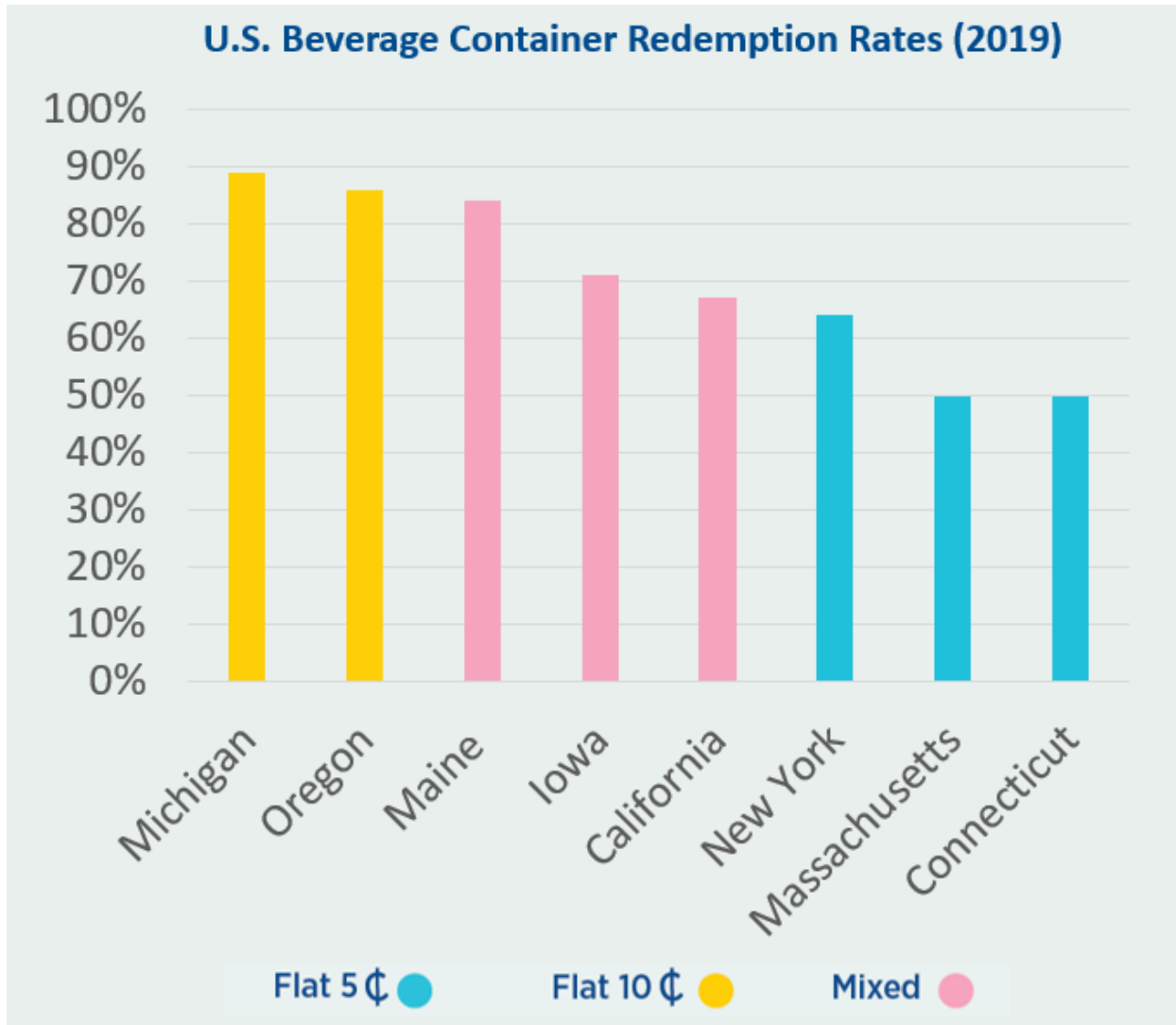
Below we will touch on a few areas in particular that affect the success of deposit programs.

The scope of a deposit program – meaning what beverage, material, and size types carry a deposit – has a direct impact on how many containers are collected for recycling.



For example, when New York expanded its DRS to include water in 2009, it doubled the amount of Polyethylene Terephthalate (PET) plastic containers captured by the system. Water containers now make up about 25% of all the containers that New Yorkers redeem for recycling.

Years of redemption data has shown that the deposit value itself plays an important role in redemption rates. There are two US states that issue a flat 10 cent deposit value: Michigan and Oregon. They both achieve redemption rates above 85% whereas states with flat 5 cent deposit values (NY, MA and CT) achieve redemption rates of 65%, 50% and 50% respectively.



Convenience is of course important too. High-performing deposit systems make redemption easy for the consumer. Consumers have a right to easily recoup their deposit money. The most common and effective redemption model is known as “return to retail”, where retailers who sell beverages must take back the empty containers. Nine out of 10 of the world’s best-performing deposit return systems employ return-to-retail collection, achieving an average return rate of 92%.² Michigan, which has the highest-performing deposit system in the US with a return rate around 90% leverages retailers in this way.

² The top ten highest performing container deposit systems in the world as of 2019 are in order: Germany (98%), Netherlands (95%), Finland (93%), Denmark (92%), Lithuania (92%), Palau (90%), Norway (90%), Croatia (89%), Michigan (89%), and Estonia and Iceland are tied with at 87%. All employ a return to retail model with the exception of Iceland and the Palau that utilize a return to depot model due to their extremely small population and minimal retail infrastructure.



Convenient redemption system for consumers

9 out of 10

of the highest performing deposit return systems in the world are “return-to-retail” models

- GERMANY
- NETHERLANDS
- FINLAND
- DENMARK
- LITHUANIA
- NORWAY
- CROATIA
- MICHIGAN
- ESTONIA



Another best practice shared by high-performing models is the idea of centralizing common responsibilities. No two deposit return systems are the same, but they share many of the same tasks such as registering products to be covered by a deposit, providing a ‘clearinghouse’ to manage product data and clear the deposits and fees, and managing container transportation.

High-performing systems require or encourage beverage producers and sometimes retailers to form a centralized entity(s), typically on a non-profit basis, to consolidate key tasks. This helps to a) facilitate problem solving between many distributors and retailers at once and b) can dramatically save costs due to elimination of duplicate tasks.



Centralizing key responsibilities



The Role of a “Centralized System Manager”

Mission	<ul style="list-style-type: none"> • Accomplish all targets at lowest possible costs for its stakeholders
Owned and financed by	<ul style="list-style-type: none"> • Beverage producers and retailers
Potential Responsibilities	<ul style="list-style-type: none"> • Deposit clearing • Product registration • Fraud management • Calculating EPR and/or handling fees • Data management • Commodity sales/distributions • Material transportation • Reporting and public education

Enhancing System Integrity

One area in particular that would benefit from more attention is ensuring an accurate count and how the program manages fraud. We can address these in statute, regulations, or by assigning the responsibility to a central administrating organization operated by the deposit initiators. Right now the two reverse vending system operators (TOMRA and ENVIPCO) can conduct some system-wide cost-benefit analyses. But more could be accomplished through an authorized state-wide administrator. Further explanation below:

Recommendations and best practices for strengthening the redemption and accounting process		
Solution	Benefit	Precedent
Allow deposit initiators to establish a central administrator to develop process for statewide product registration, count verification, audit and fraud controls for approval by DEEP.	Addresses some complex design weaknesses in the program in conjunction with updating the deposit value and covered containers.	<ul style="list-style-type: none"> • Oregon, Norway and most other deposit-return programs in the world include this feature in their program.
Incentivize the use of deposit-state specific barcodes. Allow for a greater share of the unredeemed deposits. Deposit initiators can also do this through a central administrator.	Reduces cross-border redemption by enabling reverse vending machines to reject unauthorized beverage containers. Allows deposit-initiators to adopt this if they see value (not mandatory).	<ul style="list-style-type: none"> • CT and NY – This is voluntarily practiced by some beverage distributors today. • Germany – The beverage companies' central system administrator, DPG, requires special security markings to be printed on deposit containers. • Norway – Infinitum, the beverage and retail operated 'system operator' provides producers with a choice to implement such deposit markings or pay a higher EPR fee to account for anticipated costs from unauthorized redemption.
Connect redemption equipment online.	Affords the system administrator, operators and regulators a remote view of the entire redemption system through real-time data.	<ul style="list-style-type: none"> • Quebec – authorized \$15mm over three years to encourage dealers to upgrade their dealer-based RVM redemption infrastructure. All RVMs had to be internet-ready and connected. ^[1]
Pay users of Reverse Vending technology (dealer and redemption centers) a higher handling fee or a capital grant.	Incentivizes the use of technology which has multiple upstream benefits for the deposit initiators managing the system.	<ul style="list-style-type: none"> • Quebec – see above. • Norway - Infinitum incentivizes the use of compacting RVMs, due to their cost-saving benefit with respect to fraud mitigation and transportation efficiencies. Retail sites with compacting RVMs are paid a higher handling fee than those redeeming manually or without compaction.³

^[1] "Consignment can and bottle returns – Québec injects \$15 million to help retailers modernize their equipment," The Liberal Party of Quebec. May 2018. Accessed on November 18, 2020 via <https://plq.org/en/press-release/15-millions-consignment-can-bottle-returns/>

³ "Infinitum," Reelopplatform.org. Accessed on November 12, 2020 via: <https://www.reelopplatform.org/wp-content/uploads/2019/03/Infinitum-ppt.pdf>

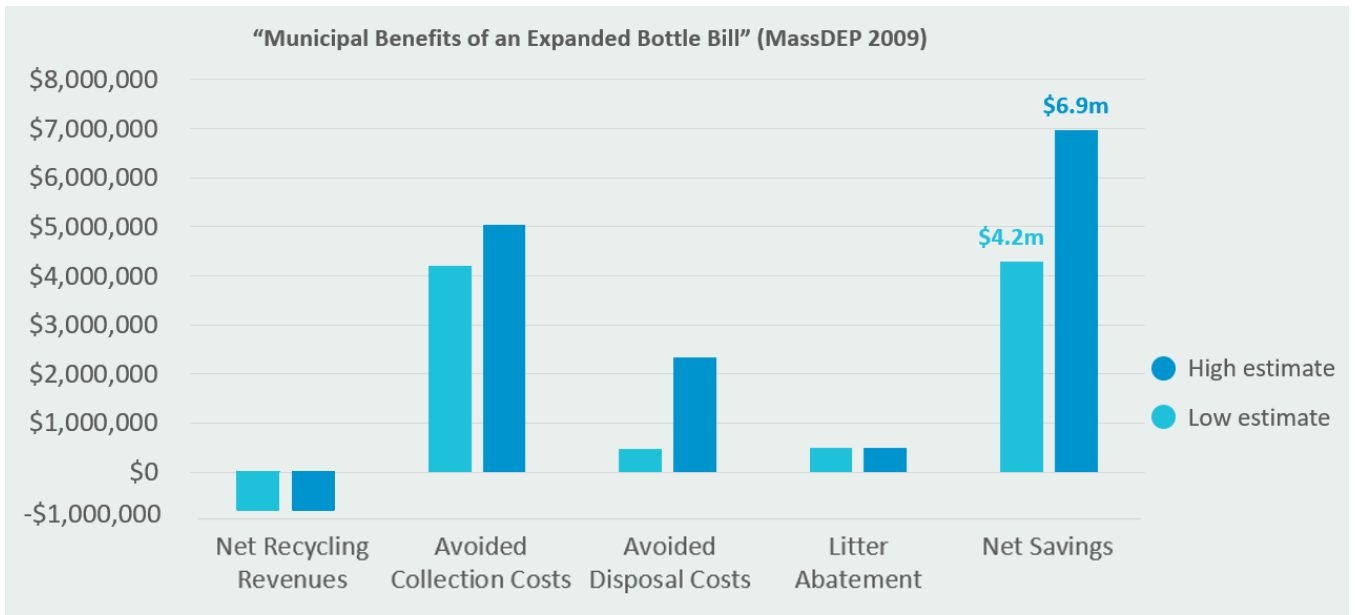
<ul style="list-style-type: none"> • Require all containers to be counted by technology. Require ‘manually’ redeemed containers to be digitally verified on-site or at a secondary counting center. • Require that containers be compacted after they are validated. 	<p>Applies a stronger ‘modern’ accounting process to manual returns. Reduces risk and shrink costs for the dealers, redemption centers, deposit initiators and State.</p>	<ul style="list-style-type: none"> • Oregon - all containers are processed through technology for validation, compaction and sorting. • Germany – in addition to a digital count, the state and producers respectively require containers to be ‘destroyed’ (via compaction) prior to retailer deposit reimbursement so containers cannot be redeemed twice. • Denmark, Norway, Sweden, Iceland, Finland, Estonia, Lithuania, Netherlands – all of these deposit systems, which together average a 90% redemption rate, require manual containers to be verified by an automated count.⁴
<p>Strengthen registration requirements for new redemption centers after January 2021; and all others starting in January 2022.</p>	<p>‘Modernizes’ the redemption center model and ensures new players are operating at a higher-level.</p>	<ul style="list-style-type: none"> • Avoid a repeat in the rise of cheating that occurred in New York following a raise in the handling fee in 2009 without standards and enforcement.
<p>Allow dealers and redemption center operators to refuse service to high-volume redeemers through a daily \$25 redemption limit at stores. RCs may accept more but only if the redeemer presents valid Connecticut identification if they used a vehicle.</p>	<p>Gives dealers and RCs a transparent guideline to discourage cross-border redemption.</p>	<ul style="list-style-type: none"> • Oregon – statute allows redemption providers to refuse redemption based on “reasonable grounds”. Redemption providers have interpreted this in practice to verify license plates and container receipts.

What type of impacts can municipalities expect from a modernized bottle bill?

In 2009 Massachusetts was considered updating its bottle bill in a similar way that CT is now so the Massachusetts Department of Environmental Protection sought to better understand how that might affect the bottom lines of municipalities given they would be losing some PET and aluminum material revenue. MassDEP commissioned a study that found while municipalities would lose \$899k in revenue from the sale of beverage container material, municipalities statewide would still generate *net savings* between \$4.2m and \$6.9m due to savings on collection and avoided disposal and litter clean-up costs.⁵

⁴ Calculation based on latest available redemption rate data. “Deposit Systems for One-Way Beverage Containers – Global Overview 2020,” Reloop. 2020.

⁵ “Analysis of the Impact of an Expanded Bottle Bill on Municipal Refuse and Recycling Costs and Revenues – Final Letter Report,” DSM Environmental commissioned by The Massachusetts Department of Environmental Protection. July 2009. Accessible here: <https://www.amherstma.gov/DocumentCenter/View/3352/635-REQUEST-FOR-SUPPORT-OF-BOTTLE-BILL>



This is mostly due to the fact that it costs money to collect process and dispose of material in the drop-off or curbside recycling streams as well as the waste disposal streams and by diverting them towns save money.

Litter reduction and minimizing ocean plastic leakage – Litter reduction has been documented in every state with a deposit law. Beverage container litter in states with a high-performing deposit system have reported beverage container liter reduction of 84% and overall litter reduction of 41%.⁶ Scientists have stated that coastal regions are significant contributors to ocean plastic pollution due to their proximity to the ocean. A 2018 study found that regions with deposit return systems have 40% less beverage container coastal litter than non-deposit regions.⁷

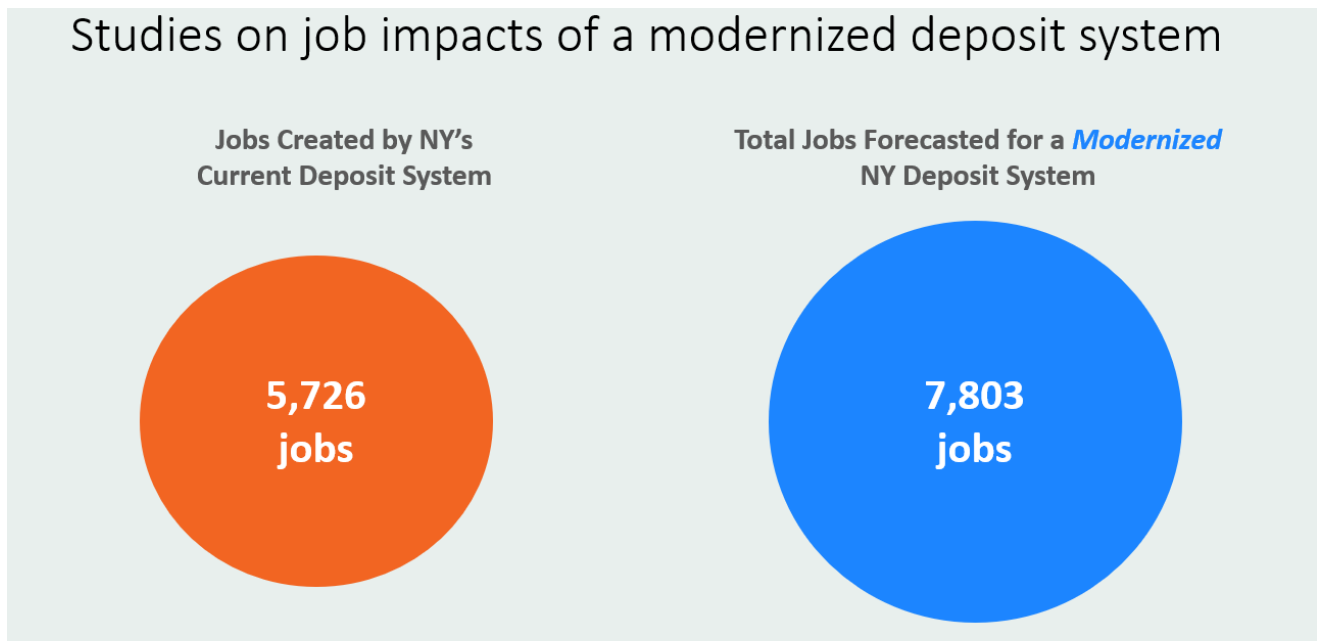
Job Creation

Finally, DEEP and others have requested information on the job creation impacts of deposit programs. The most recent job assessment on US deposit programs was conducted on New York’s program in 2019. The study found that New York’s current deposit program created 5,726 jobs today through direct, indirect or induced effect. The study stated if the program were to be modernized to include additional beverage categories and have the deposit value raised to ten cents, about 2,000 more jobs would be created bringing the total to 7,803 jobs.

⁶ Refers to MI given the state’s ten cent deposit. “Litter studies in bottle bill states,” Bottlebill.org Accessed via <http://www.bottlebill.org/index.php/benefits-of-bottle-bills/litter-studies-in-bottle-bill-states>. See also “Bottle Bills Prevent Litter”: <http://www.bottlebill.org/index.php/benefits-of-bottle-bills/bottle-bills-prevent-litter>

⁷ “Economic incentives reduce plastic inputs into the ocean,” Schuyler, Hardesty, Lawson, Opie, Wilcox. 2018. Accessed via <https://www.sciencedirect.com/science/article/abs/pii/S0308597X17305377>

Studies on job impacts of a modernized deposit system



TOMRA

"Employment and Impact of Container Deposits – New York," Eunomia. 2019. Available at Eunomia.co.uk.

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Further reading:

- How deposit programs work: 3 minute video: 'Container Deposit Short Overview,' The Container Recycling Institute and Reloop - <https://vimeo.com/223692398>
- "Municipal Benefits of an Expanded Bottle Bill," Massachusetts Department of Environmental Protection. 2009. Accessible via: <https://www.amherstma.gov/DocumentCenter/View/3352/635-REQUEST-FOR-SUPPORT-OF-BOTTLE-BILL>
- "Deposit Return System: Studies confirm big savings to municipal budgets", Reloop. 2018. Accessible via: <https://www.reloopplatform.org/wp-content/uploads/2018/05/Fact-Sheet-Economic-Impacts-to-Municipis-9May2018.pdf>
- "Cost of Curbside Recycling for Beverage Containers," Container Recycling Institute. Accessible via: <http://www.container-recycling.org/images/stories/PDF/Fullnetrecyclingcostcurbside10-18-18%20V2.pdf>
- "Deposit Systems for One-Way Beverage Containers – Global Overview," Reloop. 2018. <https://reloopplatform.eu/wp-content/uploads/2018/05/BOOK-Deposit-Global-27-APR2018.pdf>
- "Connecticut's recycling market collapses," CTPost. March 2019. <https://www.ctpost.com/politics/article/CT-s-recycling-market-collapse-13661573.php>

Section 2: Comments addressing improvements throughout the curbside collection and recycling system

1. Are there any model programs, best practices, or innovative concepts that the Coalition should consider, that could provide a scalable solution in any of the Focus Areas, listed above? The Coalition is interested in hearing about approaches that are conceptual, implemented on a pilot basis, or implemented at scale, whether here in Connecticut or in other jurisdictions in the United States or other countries.

⁸ "Municipal Benefits of an Expanded Bottle Bill," Massachusetts Department of Environmental Protection. 2009. Accessible via: <https://www.amherstma.gov/DocumentCenter/View/3352/635-REQUEST-FOR-SUPPORT-OF-BOTTLE-BILL>

We recommend that the Coalition considers the following three core approaches to increase recyclable material throughput (quantity), improve purity of the output (quality), and introduce a more equitable model for financing sustainable materials management throughout Connecticut (EPR). A focus on these approaches for the curbside recycling system, along with a well-designed container deposit law, provides a comprehensive and complementary recycling system based on circularity, where recycling rates are maximized and quality is emphasized throughout the system.

Summary:

- 1) Introduce EPR policies that cover packaging and improve recovery and product design**
- 2) Establish minimum recycled content mandates**
- 3) Invest in technology to modernize recycling infrastructure and sort prior to disposal**

Details:

- 1) Introduce EPR policies that cover packaging and thus improve recovery and product design.**

We commend CCSMM's and DEEP's commitment to EPR for difficult to recycle items including e-waste, paint, thermostats, and mattresses. However, we strongly encourage expanding the strategy to include EPR for packaging in order to improve recycling and diversion. Through well designed EPR, producers – either on their own or as part of a producer responsibility organization (PRO) – can robustly invest in new technologies, recycled content, collection systems, and circularity management practices, to help stop plastic pollution and lead the way to a sustainable future.⁹ Additionally, EPR provides relief for the cost burden of sustainable materials management from the shoulders of municipal governments to a model where producers participate in the financial and/or operational responsibility of the system. Looking to Ontario, Canada, as an example, they will be transitioning their Blue Box curbside recycling program to a full producer responsibility model between 2023-2025, where 100% of the costs will fall to the producers instead of municipalities.¹⁰

Collection and Recycling Targets

However as Connecticut envisions its future for waste management it should consider what it aims to achieve. If Connecticut is to pursue an Extended Producer Responsibility (EPR) program, it makes sense to study the best practices of Europe who has evolved its own programs to address loopholes and concerns over the years. Europe found that while a basic EPR program shifted the costs of recycling from communities to producers, it has variable impacts on actually raising recycling rates.

To address this gap in performance, in 2018 the EU passed amendments to its landmark Waste Framework Directive to establish recycling targets. This included targets for 2025 and 2030 including Plastics: 50%/55%, Aluminum: 50%/60%, Steel: 70%/80%, Glass: 70%/75%, Paper and Paperboard: 75%/85%.

⁹ "Resource Recovery Playbook" TOMRA white paper, page 10, November 2020,

https://f.hubspotusercontent40.net/hubfs/8151194/eBooks/tomra_whitepaper_circular_economy_november_2020_sp.pdf

¹⁰ "Ontario Adopts EPR for Packaging," RecyclingToday, 16 August 2019, <https://www.recyclingtoday.com/article/ontario-adopts-epr/>

a) Waste Framework Directive		2020	2025	2030	2035
Municipal Waste ¹		50%	55%	60%	65% ²
Construction & demolition waste (non hazardous)		70%	By end of 2024 – EC to set new targets	N/A	N/A
Food waste reduction (non-binding EU target)		N/A	30%	50%	N/A
b) Packaging and Packaging Waste Directive ³		Current	End 2025 ⁴	End 2030 ⁵	
Overall target		55%	65%	70%	
Plastics		22.5%	50%	55%	
Wood		15%	25%	30%	
Glass		60%	70%	75%	
Paper & cardboard		60%	75%	85%	
Metal		50% (metal)	70% (ferrous metals)	80% (ferrous metals)	
Aluminum		-	50%	60%	
c) Single-use Plastics Directive		2025	2029	2030	
Separate collection of beverage bottles		77%	90%		
d) Landfill Directive		2035			
Landfill reduction		10% or less ⁶			

In addition, the Single-Use Plastic Directive (SUPD) established a binding target for collection of beverage bottles for recycling at 77% by 2025 and 90% by 2029. In the same way, we recommend that Connecticut should set a performance target for the collection and recycling of items. This would include beverage containers as such a measure is not included in the current deposit program. The deposit program is the gold standard for an EPR program that delivers consumer convenience, high quality recyclable material, and efficiency, but its success is by no means guaranteed. Setting a performance target and a meaningful deposit value can direct the vast majority of container tonnage to a separate deposit recycling stream where material is kept clean and is ultimately recycled. High performing deposit return systems regularly achieve 90% collection rates for beverage containers.

EPR Framework

There is no one-size-fits-all EPR model, rather the state should consider at a minimum the degree of financial vs. operational responsibility for the producer; the structure of the producer responsibility organization (PRO); reporting requirements; program targets and corresponding penalties and enforcement; as well as potential fee structures, including fees that incentivize eco-modulated designs to further enable efficient recycling systems (discussed below in response to question # 3.a. Sustainability - environmental benefits).

We highly recommend consideration of the [memo](#) sent to the National Caucus of Environmental Legislators (NCEL) in August of 2020 from U.S. Sen. Tom Udall (D-NM) and U.S. Rep. Alan Lowenthal (D-CA), the sponsors of the [Break Free From Plastic Pollution Act](#) (S.3263/H.R.5845), to provide policy makers with a blueprint on key elements (e.g. EPR, recycled content mandates, bottle bill, bans, etc.) to consider in addressing plastic pollution and packaging waste. In addition to the federal *Break Free Act*, more than 11 states – including Maine, New York, Massachusetts, Oregon, California, and Vermont are currently developing EPR for packaging bills.

2) Establish minimum recycled content standards in order to stimulate market supply and demand, as well as incentivize high quality recycling.

Establishing policies that require producers to incorporate a certain amount of recycled content in products creates local market demand for high quality recycled feedstock, spurring economic development and ‘green jobs.’ For example, California requires new glass containers to use at least 35% post-consumer recycled glass, or 25% if the cullet is of a mixed color. As a result, the state has a relatively high number of glass processors (5) and glass container manufacturers (3), which provide jobs and economic benefits to the surrounding communities.¹¹ Just this past September, California’s Governor signed Assembly Bill 793 into law, requiring 50% post-consumer resin (PCR) in plastic bottles by 2030.¹² In addition, recycled content laws incentivize recycling operators to maintain the a higher quality material stream throughout the collection and processing processes in order to meet the specifications required for container manufacturers.

To advance the adoption of recycled content minimums, CCSMM and DEEP can take the following steps:

- Educate local and state policy makers on the contribution recycled content minimums can make towards waste diversion and recycling quality goals.
- Establish performance targets for manufacturers by material type and product type.
- Establish reporting requirements for producers to report to the agency the current percentage of recycled content used in each item on average (e.g. 10% recycled content in PET beverage containers). This is an existing practice in California today.

3) Modernize in-state processing infrastructure with an emphasis on investments in technology – including upgrades at existing MRFs and implementing mixed waste sorting prior to disposal – in order to capture the 50% of plastic packaging¹³ that is lost to landfill and incineration, and to achieve higher diversion rates while avoiding building new landfills, exporting waste, and exacerbating environmental justice issues.

Connecticut is already operating beyond its in-state MSW disposal capacity limits¹⁴, and if the state does not increase its recycling rate then the in-state disposal capacity shortfall for MSW will increase even further to 1.5 million tons by 2024.¹⁵ Connecticut is at a crossroads where the state is facing critical limits on processing and disposing of waste while also aiming to achieve sustainable materials management goals and maintain public health. A long term view which considers population growth would see there is a clear and present need to increase recycling rates while also expanding in-state capacity for recycling – through upgrades at existing plants as well as entirely new plants – in order to process materials locally, decrease exportation, and achieve greater diversion. Disposing of waste in other states or countries is not a viable option because it increases greenhouse gas emissions, financial risk and reputational risk related to environmental justice. Improved sorting and recycling infrastructure in-state would reduce this risk.

¹¹ GlassRecycles.org

¹² “Now signed into law, Calif. PCR mandate may become a model,” ResourceRecycling.com, 30 September 2020, <https://resource-recycling.com/plastics/2020/09/30/now-signed-into-law-calif-pcr-mandate-may-become-a-model/>

¹³ *The New Plastics Economy report*. The Ellen MacArthur Foundation. 2016
https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf

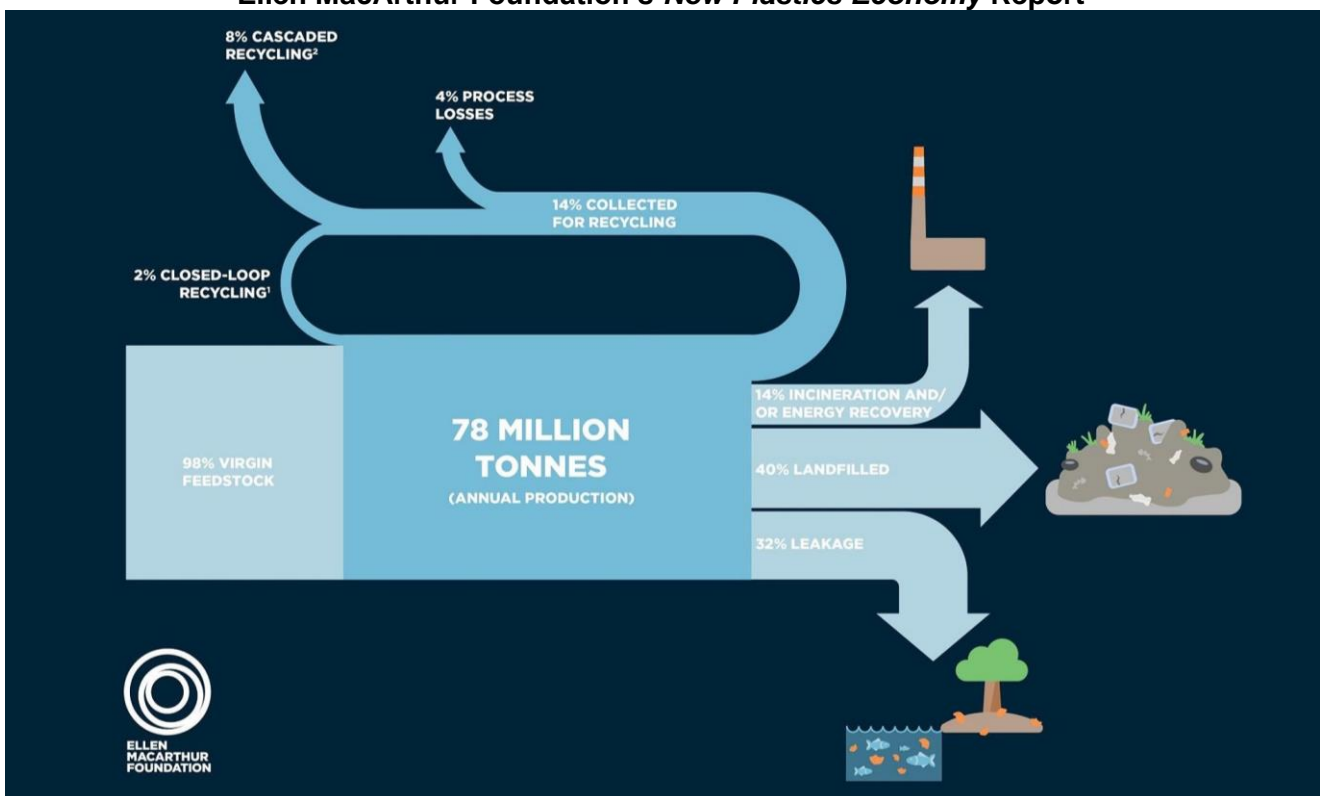
¹⁴ “Connecticut Policy to Limit Landfilling Faces Pivotal Moment as Major WTE Project Stalls,” WasteDive, 11 June 2020, <https://www.wastedive.com/news/connecticut-mira-wte-deep-sacyr-rooney-pandemic/578881/>

¹⁵ NERC’s Connecticut Fact Sheet, https://nerc.org/documents/town_business/ct/ct_fact_sheet_sharon_salisbury.pdf

In addition to improving technology at traditional MRFs, there is also significant potential for material recovery and increased diversion through the sorting of MSW before it is transferred for incineration or landfill. From a holistic perspective, scaling up the quality collection and mechanical recycling should be prioritized over and above building waste-to-energy incineration plants. By harnessing valuable materials that can be recycled or composted, the introduction of targeted mechanical sorting before incineration and landfill can result in carbon savings and other environmental benefits.¹⁶ Even with the best municipal recycling systems and corresponding educational programs, inevitably a significant portion of recyclable material ends up in the black bag MSW stream. This is where additional sorting before the incinerator or landfill can capture valuable recyclables, extend disposal capacity, and make meaningful headway towards achieving local and state recycling goals.

For example, the Ellen MacArthur Foundation (EMF)'s influential *New Plastics Economy* report from 2016 reported that an astonishing 86% of plastic packaging never enters a recycling system, with 40% going to landfill, 14% to incineration, and 32% to leakage (see graphic below)¹⁷. With over 50% of plastic packaging being lost to terminal disposal, there is clearly a huge opportunity to implement systems that recover the recyclable material in these streams and keep it in the loop, to be used again in new packaging.

Ellen MacArthur Foundation's *New Plastics Economy* Report



¹⁶ "Resource Recovery Playbook" TOMRA white paper, page 12, November 2020, https://f.hubspotusercontent40.net/hubfs/8151194/eBooks/tomra_whitepaper_circular_economy_november_2020_sp.pdf

¹⁷ *The New Plastics Economy* report. The Ellen MacArthur Foundation. 2016 https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf

2. For any solution identified in Question 1, what are the barriers that need to be addressed in order to advance any of these solutions at scale in Connecticut?

1) Introduce EPR for packaging legislation

In order to design and implement a robust and sustainable EPR model that will succeed in Connecticut, we recommend engaging stakeholders from across the value chain and at all levels of government. Additionally, as recommended in the Udall/Lowenthal Memo mentioned above, a harmonized regional approach could help achieve efficiencies throughout the system and increase the scale of impact. A broader regional approach could also facilitate buy-in and participation from producers as it ensures the same operating guidelines across states, lessening risk and uncertainty, and reducing operating costs.

2) Establish minimum recycled content mandates

In order to ensure that recycled content targets are achieved, we highly recommend that they are accompanied by meaningful penalties and enforcement mechanisms. As recommended above in regards to establishing EPR for packaging legislation, working towards a harmonized regional approach for recycled content mandates, with participation from across the stakeholder value chain has the potential to achieve widespread buy-in and is set up for success early on. Recycled content mandates are complementary to EPR and bottle bill policy; bottle bills with high recovery targets and meaningful deposit values facilitate higher collection rates with higher quality materials, thereby enabling closed loop recycling which is based on recycled content.

3) Invest in technology to modernize recycling infrastructure and sort prior to disposal

EPR is a useful tool to establish funding to invest in equipment upgrades and new facilities which are necessary to achieve high recycling performance. With municipal budgets under increasing constraints, EPR is an alternative approach to provide the funding necessary to upgrade equipment that will maximize high quantity and high quality yields. In order to achieve recycled content targets, especially for closed loop and food-grade recycling, recycling yields must meet higher quality specifications to be fit for purpose and technology is core to achieving those specifications.

a. Are there different implementation considerations for full or partial “subscription” towns versus towns that provide for curbside collection of trash & recyclables?

No

b. Is it necessary or beneficial for the solution to be implemented on a statewide, multi-town, or other regional basis, or can it be implemented successfully town-by-town?

State level implementation is recommended in order to achieve greater impact while maximizing efficiencies, achieving economies of scale, avoiding confusion, reducing contamination, and increasing overall recycling and diversion rates. However, all three of these approaches can at a minimum be discussed with local stakeholders to educate and build the groundswell of support that is necessary to ensure the system is backed by a majority of stakeholders and is effective once it is implemented at the state (or federal) level.

3. For any solution identified in Question 1, please describe the types of implications or benefits that the solution provides with respect to:

a. Sustainability - environmental benefits

1) Introduce EPR for packaging legislation

- Eco-modulated fees incentivize better packaging design: EPR puts the responsibility on the producer to ensure that the products they're putting on the market have a pathway to recovery, or otherwise they pay more into the system and are at a competitive disadvantage. Using eco-modulated fees is a core component of well-functioning EPR systems and as is common practice in Europe and Canada. Eco-modulated fees incentivize packaging design that minimizes the amount of resources required to produce it, that is more easily recycled, and that has end markets that can put the material back into production. When EPR is implemented on a small-scale (e.g. city, state), some producers may choose to absorb the eco-modulated fees as a cost of doing business. The wider the implementation of the EPR model throughout a region, the greater the impact of eco-modulated fees. For example, when Ontario – Canada's largest province with nearly 40% of the country's population – transitions to a full producer responsibility model by the year 2025, this significantly expanded scope has the potential to eliminate non-recyclable packaging. At that much larger scale the fees are expected to reach a tipping point where producers no longer see an advantage in merely absorbing costs that they can avoid with improved design.¹⁸
- EPR reduces dependency on landfills and encourages recycling: EPR follows the waste management hierarchy, incentivizing more preferential options such as recycling, over the less preferential options such as landfill disposal.¹⁹ Under Québec's EPR model, which has been based on 100% producer financial responsibility since 2013, they were able to boost their recovery rate of packaging and printed paper (PPP) from 20% in 2000 to approximately 65% in 2010, which is more than twice as high as the 32% recovery rate in the U.S. where EPR for PPP does not yet exist.²⁰ Similarly, many countries in the EU, where EPR for PPP has been in place for decades, have achieved recycling rates above 70%, again far outperforming the U.S.²¹ Collection and recycling targets established in the EPR framework drive materials management towards the top of the hierarchy, with the ultimate goal to reduce the amount of material going to terminal disposal.

2) Establish minimum recycled content mandates

- Recycled content mandates reduce virgin resource extraction and associated GHG emissions: Minimum recycled content mandates are the backbone to a sustainable recycling system and supply chain. By increasing the use of recycled content, we will reduce the demand for energy associated with what we consume, and that reduction in energy consumption should quicken the decarbonization of the energy system. This is why it is so important to collect, sort and process materials for recycling in such a way that their quality enables their reintegration into productive use within the framework of a circular economy.²²

¹⁸ "Canada's Recycling Industry is on Life-support. Here's How to Fix It." Global News Canada, 1 May 2019, <https://globalnews.ca/news/5207352/how-to-fix-canadas-recycling-industry/>

¹⁹ "Extended Producer Responsibility at a Glance," Extended Producer Responsibility Alliance (EXPRA), March 2016, http://www.exptra.eu/uploads/downloads/EXPRA%20EPR%20Paper_March_2016.pdf

²⁰ "An EPR Evolution," Resource Recycling, Pierre Benabidès and Sara-Emmanuelle Dubois, 13 April 2020, <https://resource-recycling.com/recycling/2020/04/13/an-epr-evolution/>

²¹ "Packaging and Plastics," Product Stewardship Institute (PSI), <https://www.productstewardship.us/page/Packaging>

²² "Resource Recovery Playbook" TOMRA white paper, page 36, November 2020, https://f.hubspotusercontent40.net/hubfs/8151194/eBooks/tomra_whitepaper_circular_economy_november_2020_sp.pdf

If properly enforced, recycled content mandates reduce the supply chain's dependence on energy intensive virgin resource extraction and have the potential to lower the overall environmental footprint of the packaging or product. Recycled content mandates stabilize market demand for high quality recycled material thereby increasing the market's interest in actually collecting and recycling more packaging – beyond simply labeling a product as 'recyclable.'

3) Invest in technology to modernize recycling infrastructure and sort prior to disposal

- Technological solutions that focus on quantity and quality reduce the amount of material sent to landfill and enable more efficient use of primary resources: In order to reach high recycling and diversion rates, a variety of technical solutions can be utilized to sort increasingly complicated material streams (e.g. multi-material, multi-layer, etc.). Using the latest technology to sort and recycle materials ensures maximum yields and minimum residuals as well as reducing labor costs and increasing material purity.²³ For example, optical and other sensor-based sortation technology can reduce contamination as well as improve the accuracy and speed of sorting material from a variety of material streams including mixed waste, single stream, dual-stream, construction and demolition (C&D), e-waste, etc.²⁴ Implementing technological solutions enables higher capture and a greater return to market of high quality outputs; thereby reducing terminal disposal and the associated harmful GHGs.
- Mixed waste sorting in front of landfill or incineration increases recovery: As outlined in response to question #1, The Ellen MacArthur Foundation reports that over 50% of plastic packaging ends up in landfill or incineration. Even in the best designed recycling program situated in a highly motivated community, the reality is that a significant amount of packaging ends up in the black bag residual stream. Recycling programs should first be optimized to maximize access and collection and to ensure participants understand what is accepted in their local program. However, in order to capture the material that doesn't make it into the recycling stream, additional solutions are needed. Mixed waste sorting is a complementary approach to recycling that enables municipalities to achieve zero waste and recycling goals by capturing the significant portion of materials that would otherwise be lost to terminal disposal, and returning them to the supply chain.

b. Reducing costs

Establishing EPR for packaging is the most comprehensive approach to reduce costs and lift the burden from taxpayers and municipalities. There are costs associated with upgrading technological solutions and with mandating recycled content rates, however EPR provides the framework to distribute those costs across producers, namely those that are putting products on the market that are more difficult to recycle, have a significant impact on the environment, and have higher costs associated with managing the product's end-of-life. Producers that are innovative and that develop packaging solutions that can easily be recycled will pay less into the system, while the worse performing packaging will have higher associated costs. The end result is that the financial burden for waste management is largely lifted from municipalities, freeing them up to apply those funds towards other priorities and leaving producers to take on the responsibility for their products.

²³ "Sorting Technology Can Help Overcome Recycling Business Disruptions," Recycling Magazine, 17 April 2020, <https://www.recycling-magazine.com/2020/04/17/sorting-technology-can-help-overcome-recycling-business-disruptions/>

²⁴ "Powerful Optical Sorting Technologies, Artificial Intelligence, and Robotics Reduce Contamination for Recycling Operations," Recycling Product News, 2 July 2020, <https://www.recyclingproductnews.com/article/34294/powerful-optical-sorting-technologies-artificial-intelligence-and-robotics-reduce-contamination-for-recycling-operations>

4. Would you be interested or willing to present to the Coalition or a Coalition working group on solutions you've highlighted, or is there another speaker or organization that would be helpful for the Coalition to hear from on this topic?

Yes

5. DEEP can play an important role in advancing sustainable materials management solutions, including: issuing RFPs for long-term energy contracts to support anaerobic digestion facilities; providing grants for collection trucks powered by compressed natural gas (CNG) or electricity through the Volkswagen settlement; employing different approaches to permitting innovative technologies; and streamlining permitting processes. Are there things that DEEP should do differently in its approach to any of the above roles/functions, that would better support sustainable materials management in Connecticut?

In addition to the opportunity for DEEP to educate municipalities and the legislature on the impact of upgrading to a high-performing deposit system as mentioned in section #1, DEEP similarly can play an important role in convening stakeholders across the value chain and throughout the state so that solutions are based on comprehensive systems-level considerations. Also, we highly recommend emphasizing and setting targets for quality in policy, RFPs, and grants to ensure that the outcomes continue to facilitate closed loop recycling, achieve recycled content targets, and contribute to increasing recycling and diversion rates.

6. Are there any solutions that you would like the Coalition to know about that do not fit within the Focus Areas above?

No

7. Are there any aspects of the Focus Areas, listed above, that the Coalition should not consider (and if so, why)?

No

Summary

We look forward to supporting DEEP's and CCSMM's work in identifying and implementing sustainable materials management solutions that will improve recycling and diversion rates across the state, as well as continuing to partner to facilitate a cleaner and healthier environment where waste is treated as a resource. TOMRA is in full support of improving the state's recycling infrastructure capabilities. We believe that the goals of DEEP and CCSMM can be realized through investment in technology, optimization of the container deposit program, a focus on quality throughout the system, expanding EPR to include packaging, and finally, through the adaption of mixed waste sorting in order to capture recyclable materials prior to terminal disposal.

Thank you for your consideration. We welcome any follow-up inquiry.

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ABOUT TOMRA

TOMRA Systems provides a range of advanced vision systems that utilize sensor-based technology to sort everything from bottles to blueberries allowing companies and consumers to reduce their waste footprint and providing a stream of clean valuable material to the 'circular economy'.

TOMRA Collections Solutions is the world's leading provider of reverse vending, material recovery, and clearinghouse solutions with over 83,000 installations in 60+ markets. Every year TOMRA facilitates the collection of more than 40 billion empty cans and bottles and provides retailers and other customers with an effective and efficient way of collecting, sorting and processing these containers. TOMRA North America is based in Shelton, Connecticut.

TOMRA Sorting-Recycling is a global leader in its field and pioneered the automation of waste sorting. Currently TOMRA Sorting Recycling has an installed base of close to 5,960 units across more than 40 markets.