

Best practices in container deposit recycling systems

–
Environment & Transportation Committee

Mike Noel
Governmental Affairs Manager
TOMRA

Topics for today

Introduction to TOMRA

Overview of the key functions of deposit systems

Key principles and elements of high performing deposit systems

Automated redemption and commingling

Introduction to TOMRA



Pioneering
advanced technology
in collection and
sorting for
recycling



Collection & Sorting Solutions
4,500+ employees globally

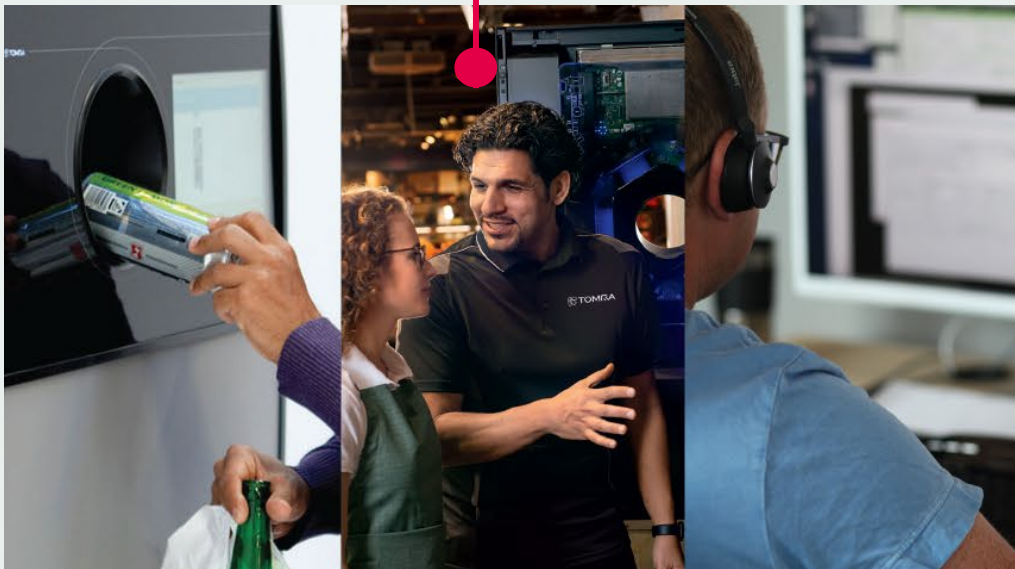
We are active in every link of the deposit value chain

Offer redemption technology to ~44 redemption locations across VT

Pick-up from 130 locations across VT for most distributors

Processing facility in Essex, VT

REVERSE VENDING



MATERIAL RECOVERY



RVM Technology



Service Support



Data Admin/
Clearing



Material Pick-Up



Material Processing



Material Brokerage



Material Recycling

TOMRA has four decades of experience in deposit systems

**ACTIVE IN EVERY MAJOR
GLOBAL DEPOSIT MARKET**



NORWAY



GERMANY



MICHIGAN



QUEBEC



AUSTRALIA



OREGON

+ 34 more markets

40 BILLION

cans and bottles collected annually

84,000

reverse vending installations globally

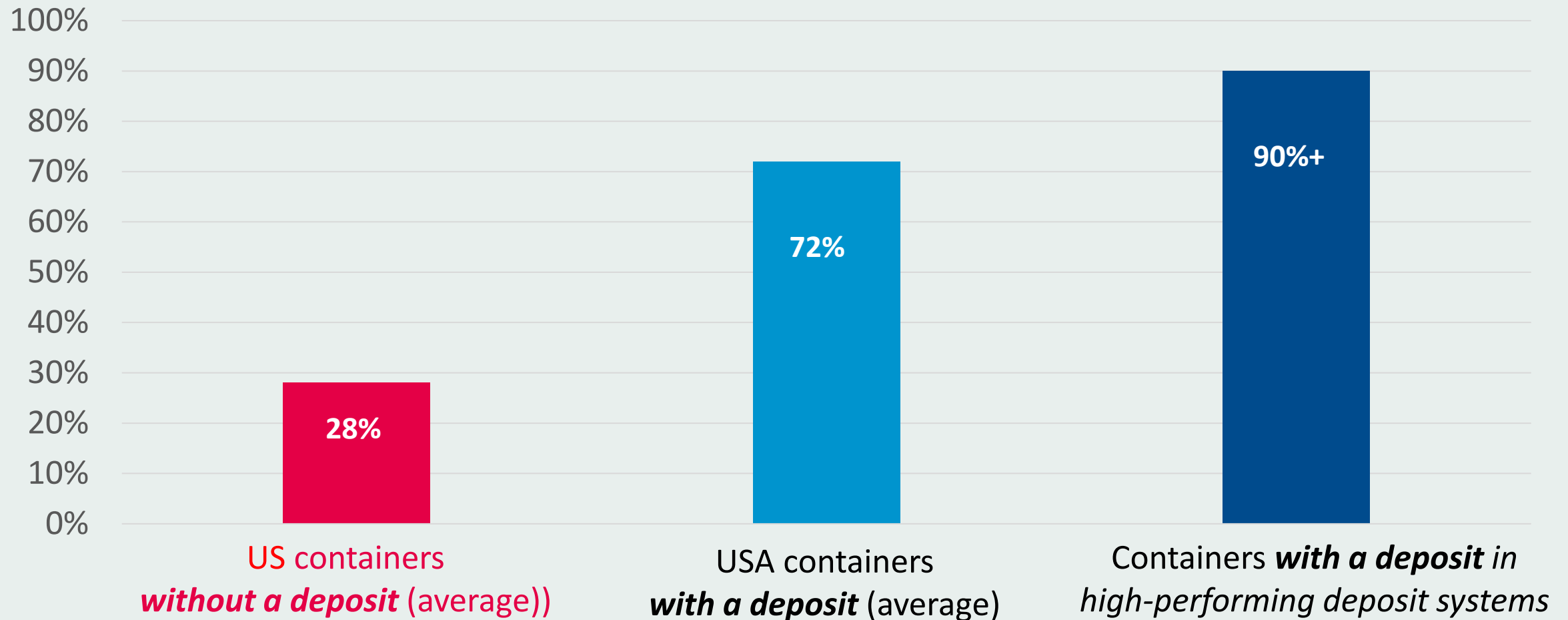
\$6.8 BILLION

in deposits exchanged annually

Overview of the key functions of deposit systems

Deposit systems are extremely effective at capturing items for recycling, diverting from waste stream

Beverage Container Collection Rates for Recycling



Deposit systems achieve higher quality recycling – avoiding downcycling



SINGLE – STREAM GLASS



DEPOSIT GLASS

Containers collected in the deposit stream can generate more economic value, because the material is kept clean.

Material collected in deposit systems is kept clean, enabling true recycling and generating more value



Glass

- Can *cost* curbside operations \$20 a ton vs *gaining* \$20/ton in revenue in a deposit systems ¹



PET Plastic

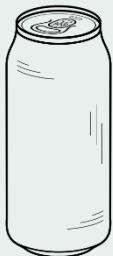
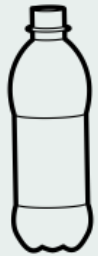
- Generally deposit PET bales are 40% more valuable than curbside bales ²
- (However when RecyclingMarkets.net listed deposit vs. curbside values in Jan – Jul 2020, deposit values were 58-93% much higher).³



Aluminum

- Value depends on the MRF (as with all material).
- Novelis says *“I don’t have any specific data, but we do focus our contracts (and typically higher prices) towards deposit material. Reasons being: Consistent flow, level of cleanliness, and level of quality.”*⁴

What happens to all the deposit containers collected for redemption in VT today?

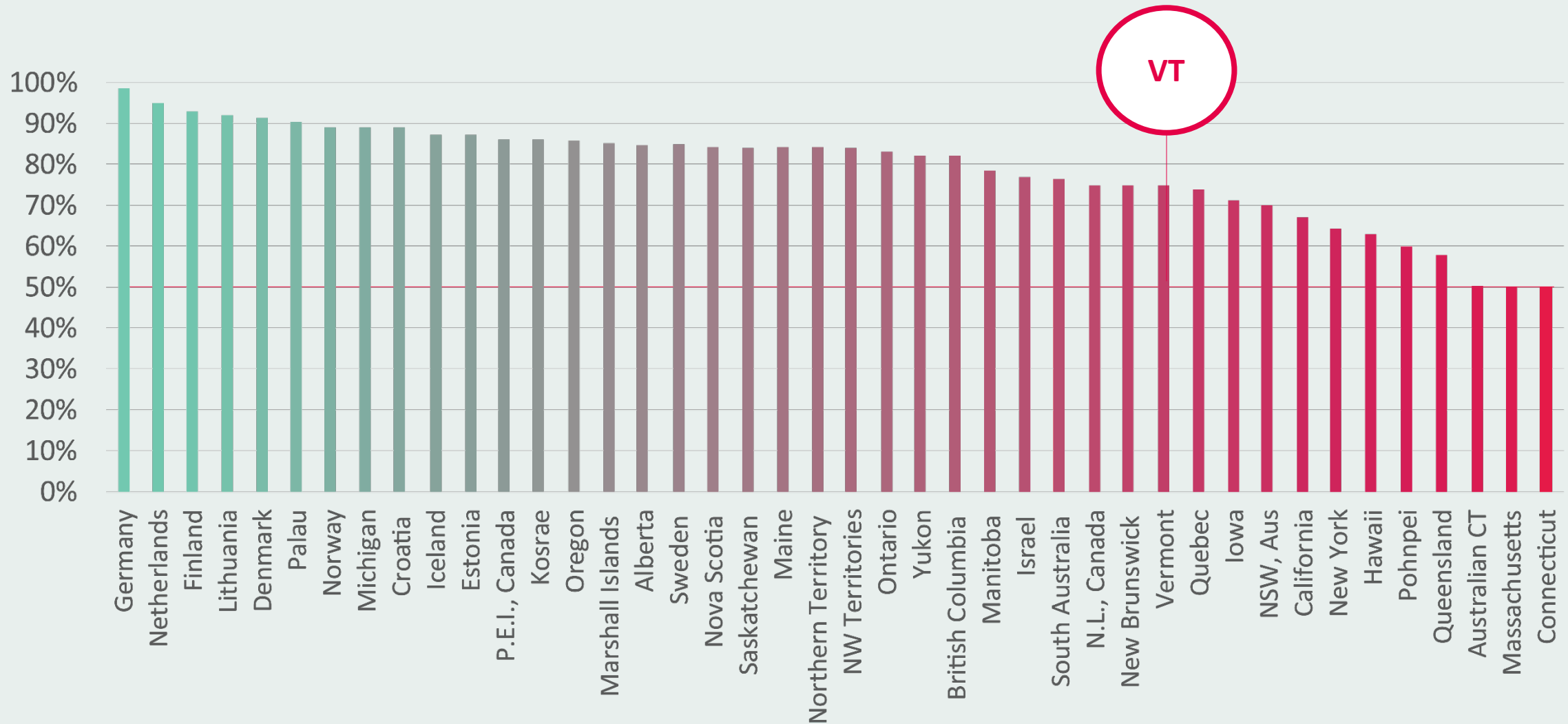


Material	Destination	End market	Recycling amount
Plastic	Sent to PET recycler in NY.	Recycled into mostly new bottles and food containers	✓ Virtually all is recycled
Glass	Sent to glass processor in Montreal	Recycled into new containers and fiberglass	✓ Virtually all is recycled
Aluminum	Sent to a recycler in Kentucky	Recycled into new cans, auto-parts, industrial applications, etc.	✓ Virtually all is recycled

Key Principles of High-Performing Deposit Return Systems

Not all deposit systems are performing to their potential

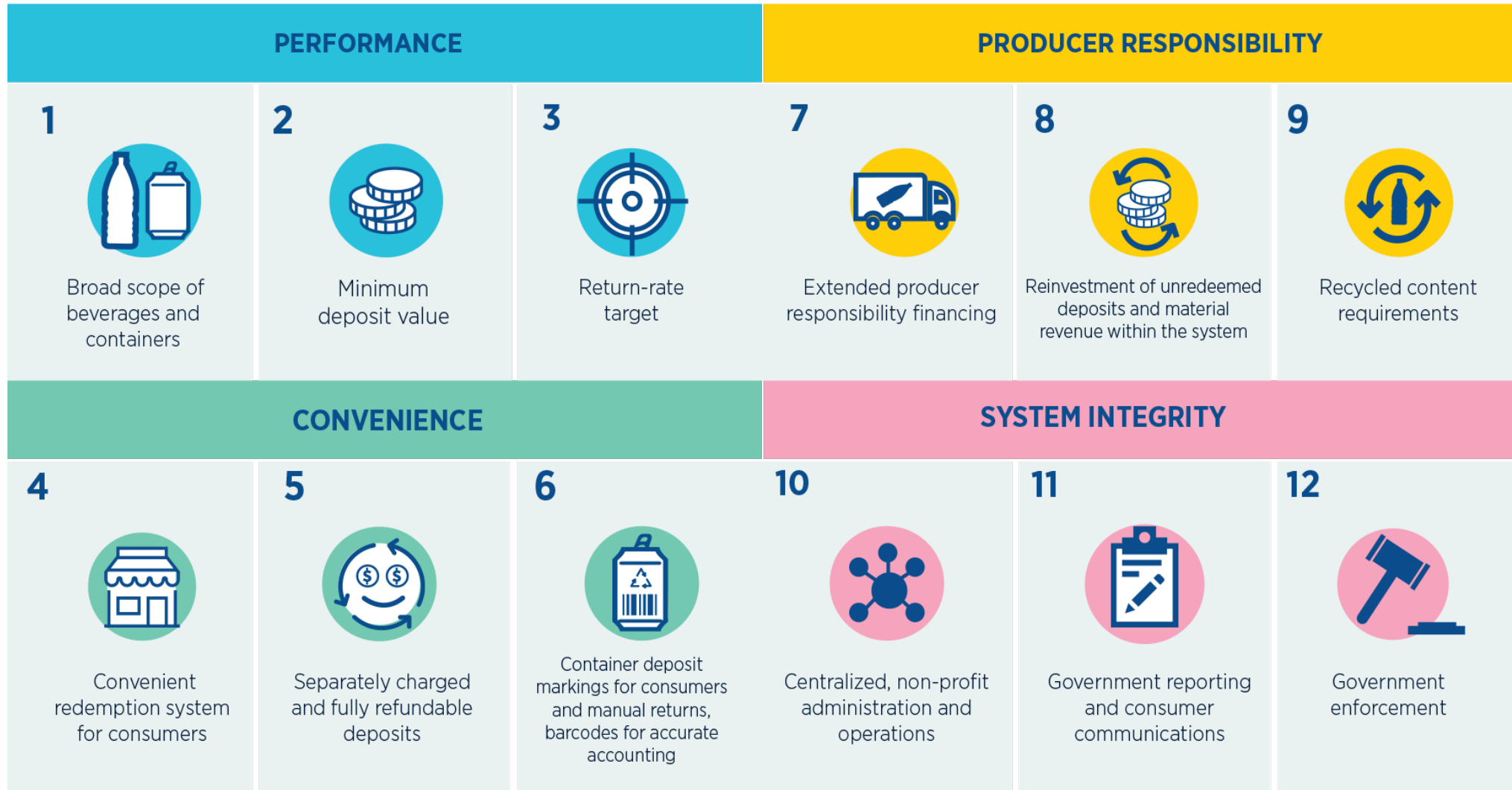
Return rates of every deposit return system in the world (2019)



Why are some container deposit return systems succeeding while others are failing?

Key elements of high-performing DRS

All of the elements – when applied together – will address global waste challenges and advance a circular economy.

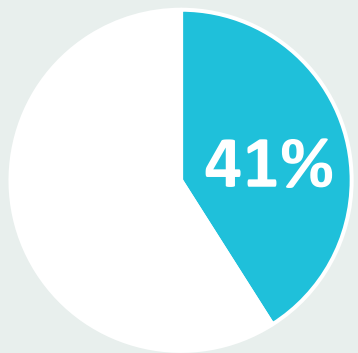




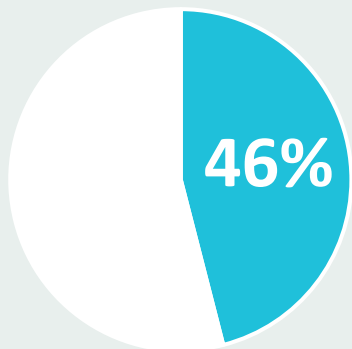
Broad scope of beverages and containers

Percent of beverage containers sold covered by deposit program

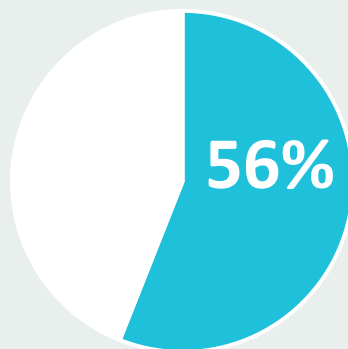
MASSACHUSETTS



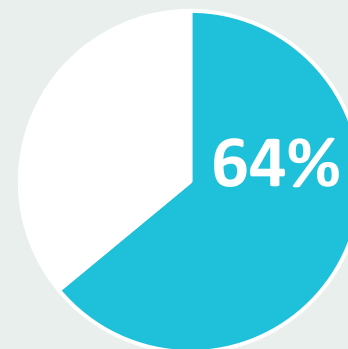
VERMONT



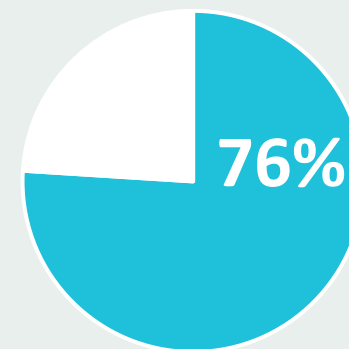
MICHIGAN



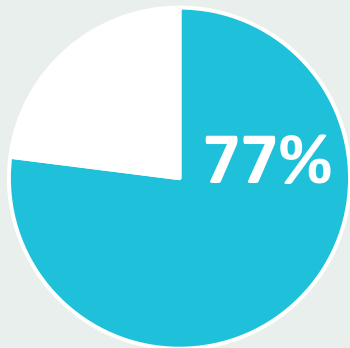
IOWA



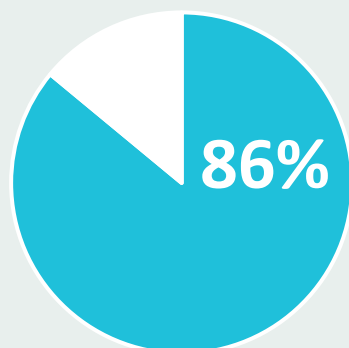
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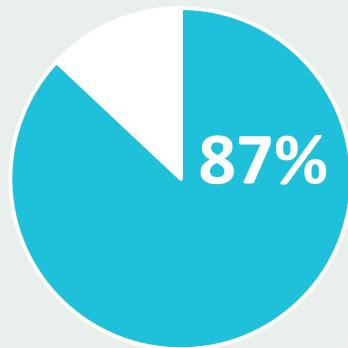
NEW YORK



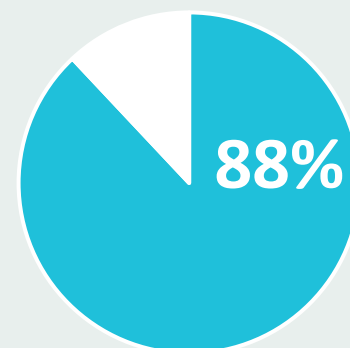
CALIFORNIA



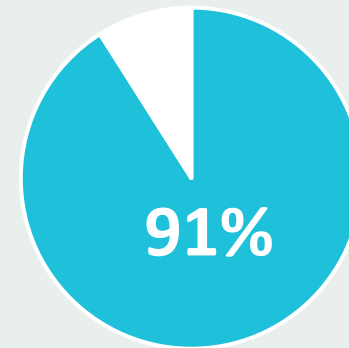
HAWAII



OREGON



MAINE

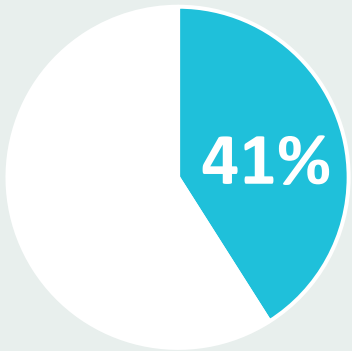




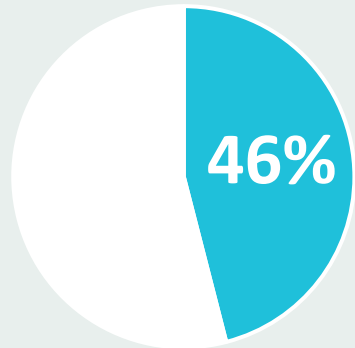
Keeping up with the times

Percent of beverage containers sold covered by deposit program

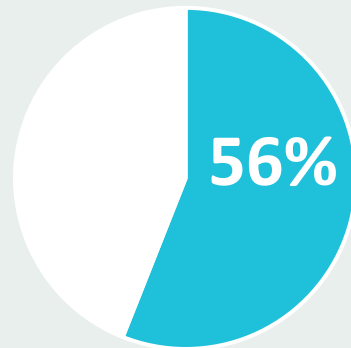
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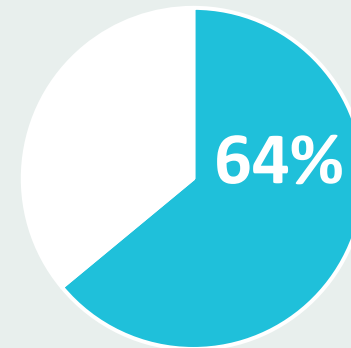
VERMONT



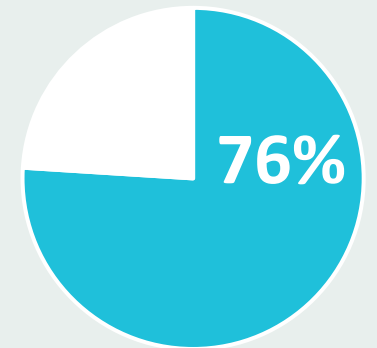
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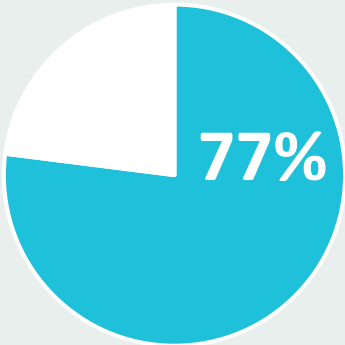
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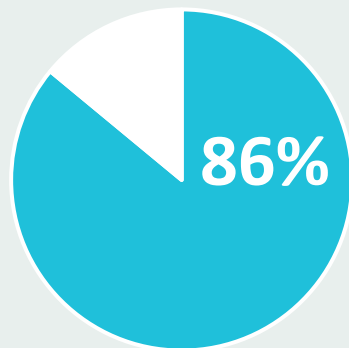
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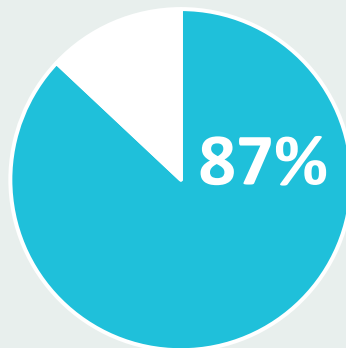
NEW YORK



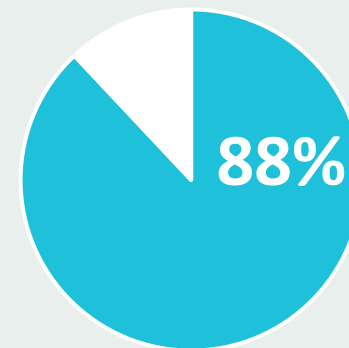
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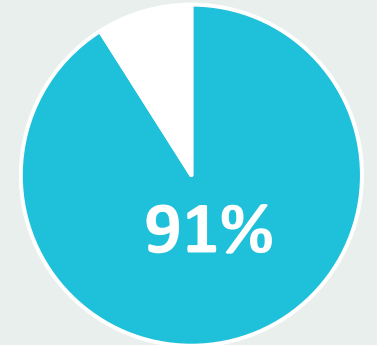
HAWAII



OREGON



MAINE



● Includes wine

● Includes water

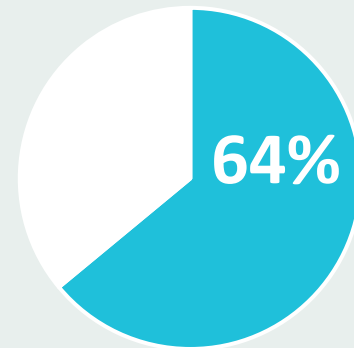


Keeping up with the times

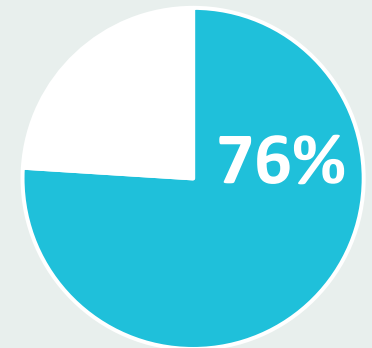
Percent of beverage containers sold covered by deposit program

Adding bottled water alone *doubled* the amount of plastic bottles captured by New York's DRS.

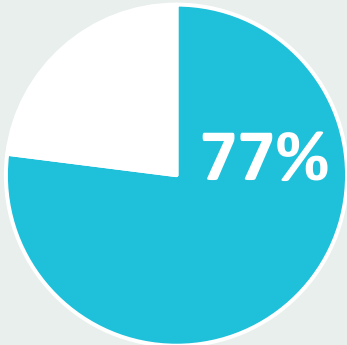
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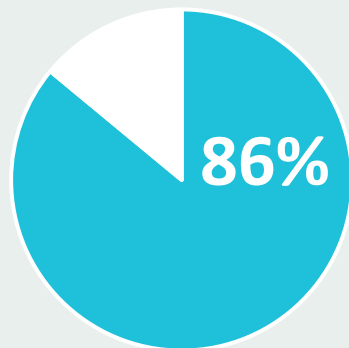
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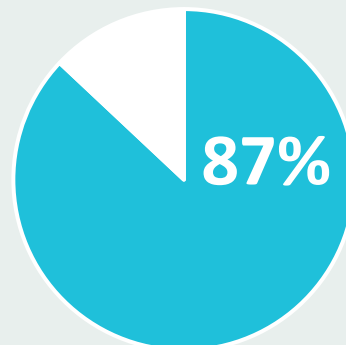
NEW YORK



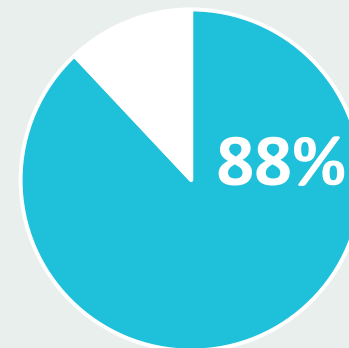
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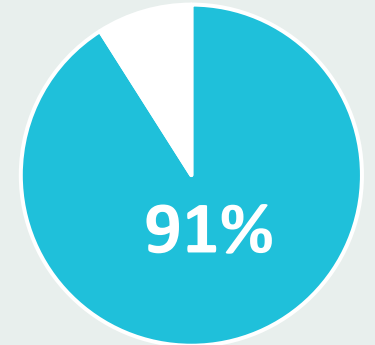
HAWAII



OREGON



MAINE



● Includes wine

● Includes water

17 Deposit systems around the world already include wine and liquor

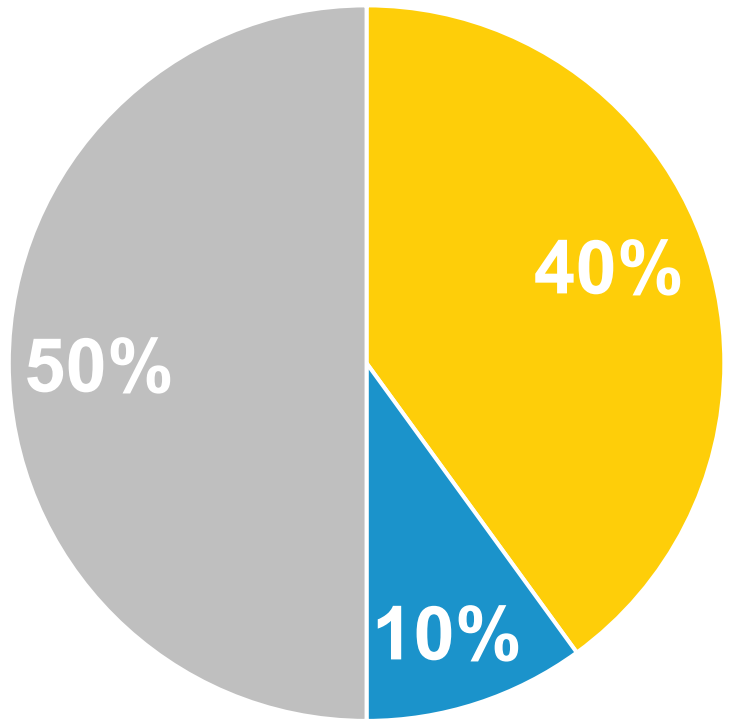
DEPOSITS SYSTEMS THAT ALREADY INCLUDE WINE

Maine	Iowa	England & Wales*	Scotland*
Quebec*	British Columbia	Ontario	Iceland
Norway	Finland	Croatia	Nova Scotia
Prince Edward Island	Saskatchewan	Yukon	Newfoundland & Labrador
New Brunswick		Northwest Territories	

*Proposed by government. Still to be confirmed.

Wine typically makes up 40-50% of the glass in a curbside or drop-off bin

Curbside Glass (Outside NYC)

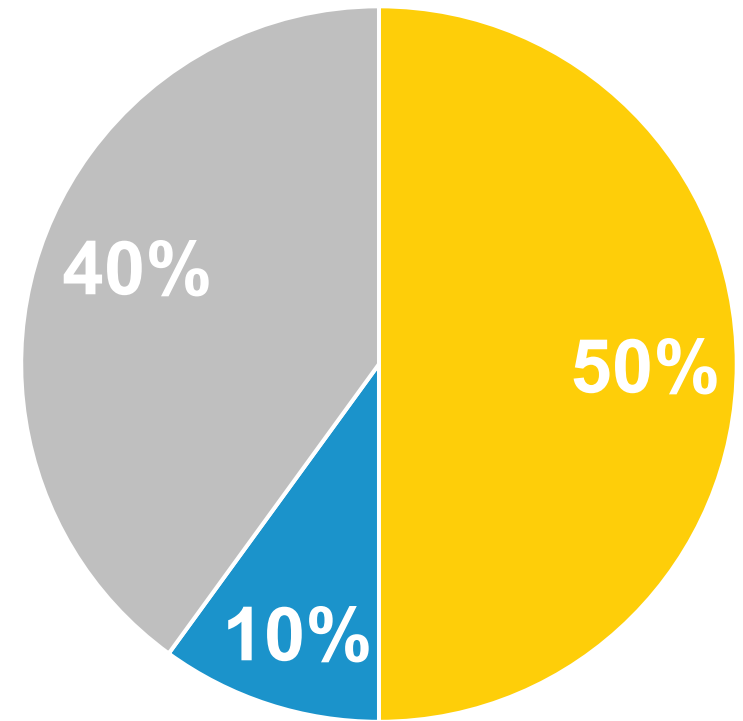


● **Other**

● **Wine**

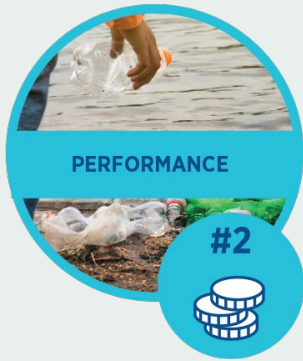
● **Liquor**

Drop-off Glass (CT - HRRA)



Source: Onondaga County Testimony. Oct 21, 2019.

Source: Housatonic Resource Recovery Authority Glass Waste Audit. 2021.



A meaningful deposit value is the strongest driver of results

Beverage Container Redemption for Recycling Rates (Latest data available)

High-performing systems are achieving good results with a deposit of 10¢



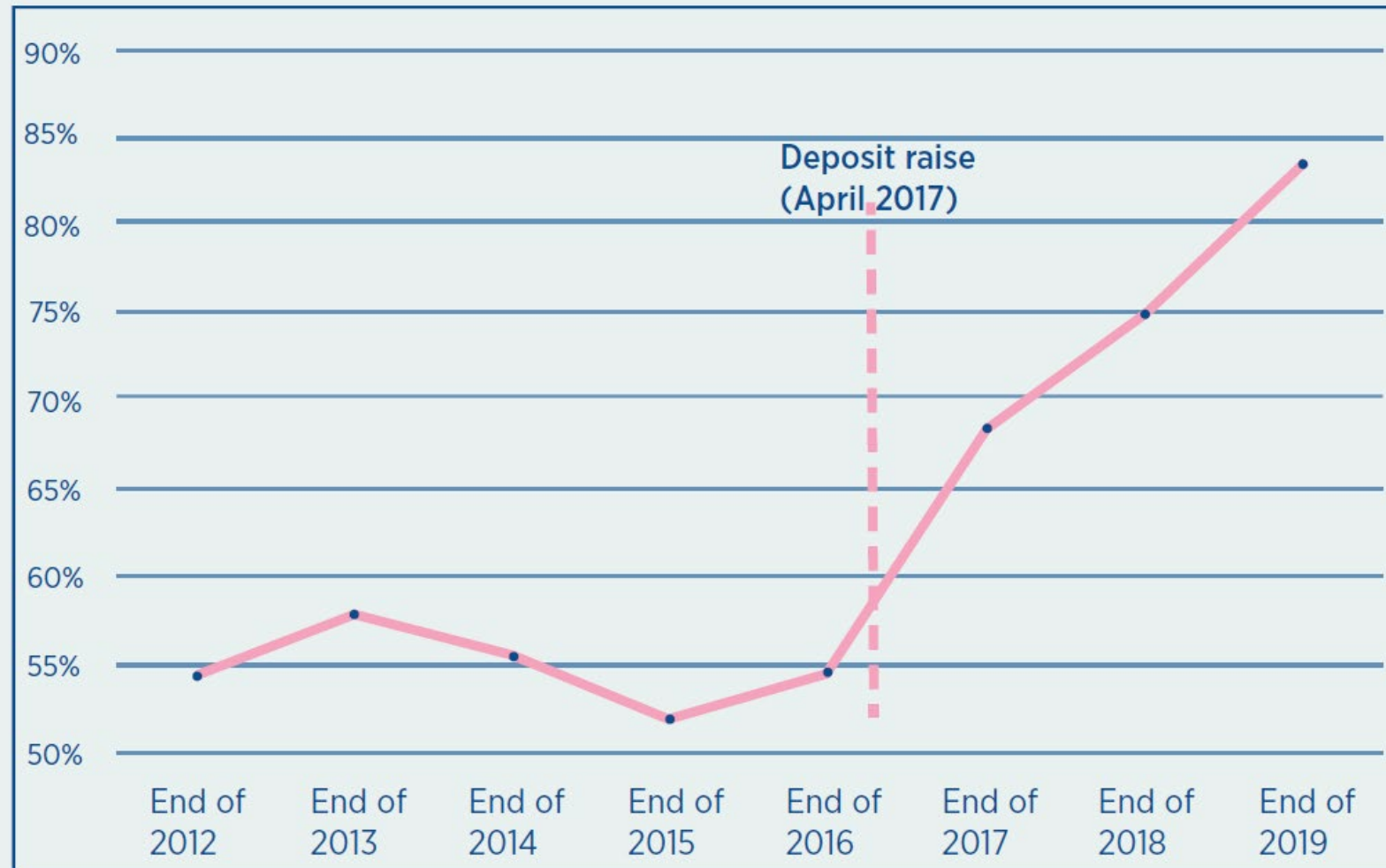
Flat 10¢ ●

Mixed ●

Flat 5¢ ●

Raising the deposit made an immediate difference in the number of containers captured for recycling in Oregon

Return rate of plastic bottles in Oregon



There are multiple solutions to address unauthorized redemption, *some don't even require legislation*

State-specific Markings and Barcodes

Unique “Add-on Barcodes” or deposit markings enable the rejection of non-deposit containers.



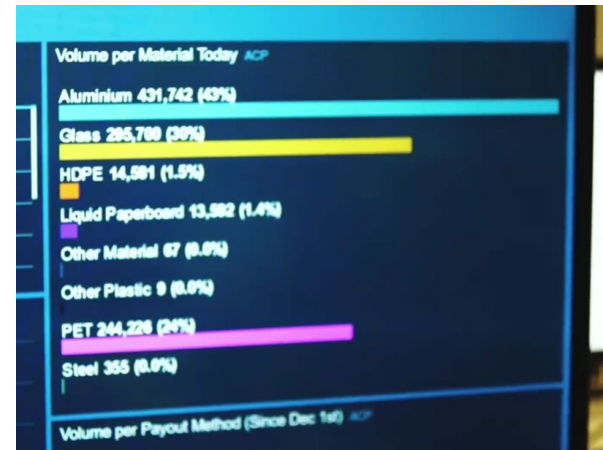
Manual redemption protocols

Brand owners to establish procedures for containers redeemed manually, which would validate the count and expedite payments (e.g. incorporating a second count of containers through automated equipment)



Online RVM network

A network of internet-enabled RVMs enable remote monitoring of potential fraudulent behavior.



Permits for new redemption centers

DEC can develop regulations which certify new redemption centers based on best practices in redemption operations.



There are multiple solutions to address unauthorized redemption, *some don't even require legislation*

State-specific Markings and Barcodes

Unique "Add-on Barcodes" or deposit markings enable the deposit c

On-line RVM Network

A network of internet-enabled RVMs

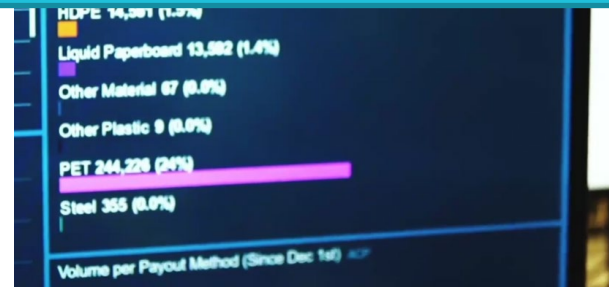
Manual redemption protocols

Require brand owners to establish

Permits for new redemption centers

DEC can develop regulations which redemption centers based s in redemption tions.

- Or the legislature can task Producers to come up with their own plan, subject to the legislature's review.
- Producers are best positioned to comment on the costs/benefits of solutions vs. status quo.
- Alternatively, DEC can develop such a plan with stakeholder input.



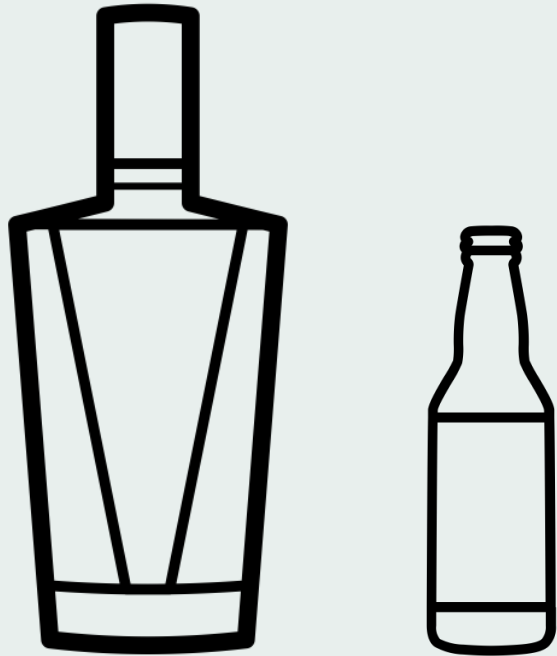
Final points about automated redemption and commingling

What can and cannot fit in an RVM?



- Wine bottles are accepted in RVMs
- However we do recommend a 2.5 liter max limit on non-carbonated beverage categories.
- Nips cannot be accepted in RVMs (however they can be accepted manually)

Commingling challenges



- Including liquor in one large commingling group with other beverage categories will cause reimbursement challenges for distributors.
- We recommend excluding liquor from this commingling group (keeping the HF at 4 cents).
- Since liquor is distributed by one distributor in VT this would not affect the number of sorts significantly for redemption centers/retailers.

Off-setting material revenue

- Avoidance of waste tip fees, collection, processing costs and litter clean up costs can offset material revenue losses (e.g. VT Eunomia report).
- Precedent for reimbursement in California, Calgary, and New South Wales, Australia.

Questions?

Thank you

GovAffairs@TOMRA.com



Wolfgang Ringel, SVP, Governmental Affairs

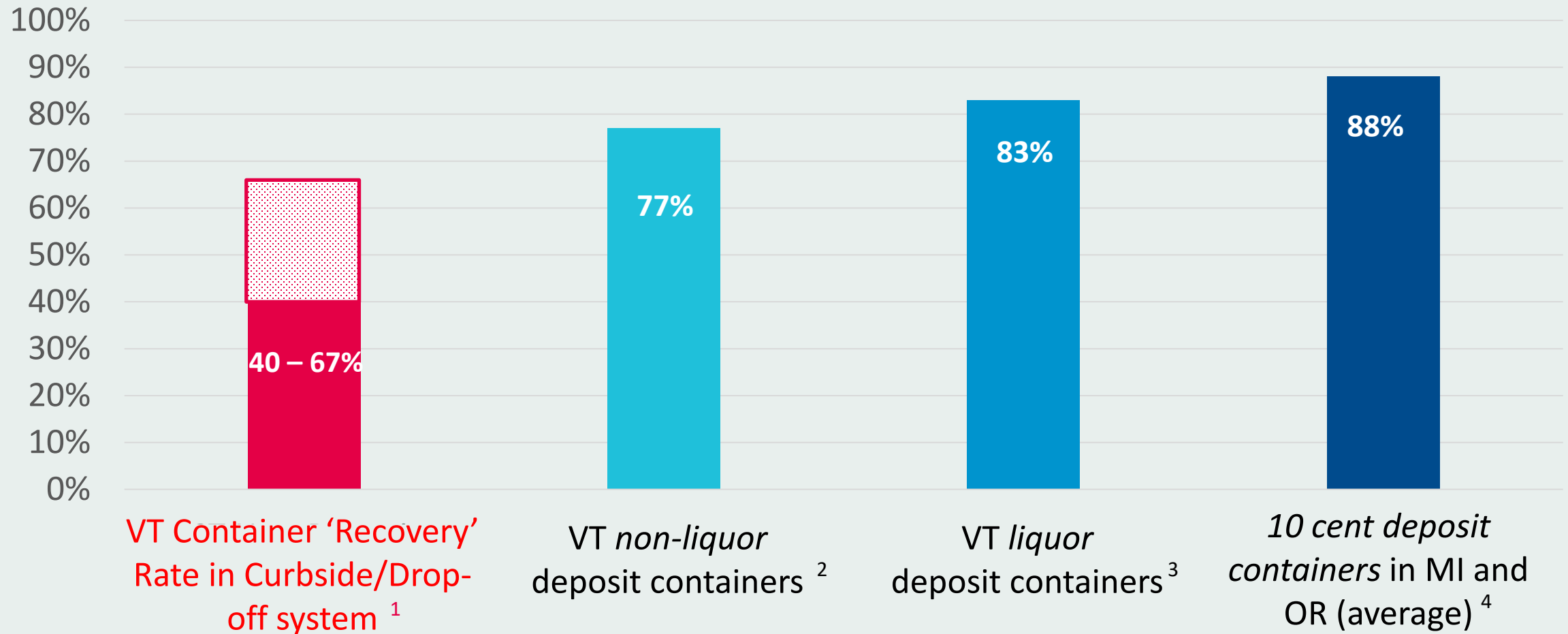
Mike Noel, Manager, Governmental Affairs @MrMikeNoel

[TOMRA.com/DepositReturn](https://www.tomra.com/DepositReturn)

Appendix

Deposit systems generate higher collection rates for recycling

Beverage Container Collection Rates for Recycling



¹ Casella Testimony. 2021. And '2018 Waste Characterization' Prepared for DEC. 2018. BY WEIGHT..

² Oct 2019 – Oct 2020 Sales/Redemption Data, DEC. BY UNIT.. 2021. ³ Container Recycling Institute. 2021. BY UNIT. ⁴ Bottlebill.org 2019. BY UNIT.

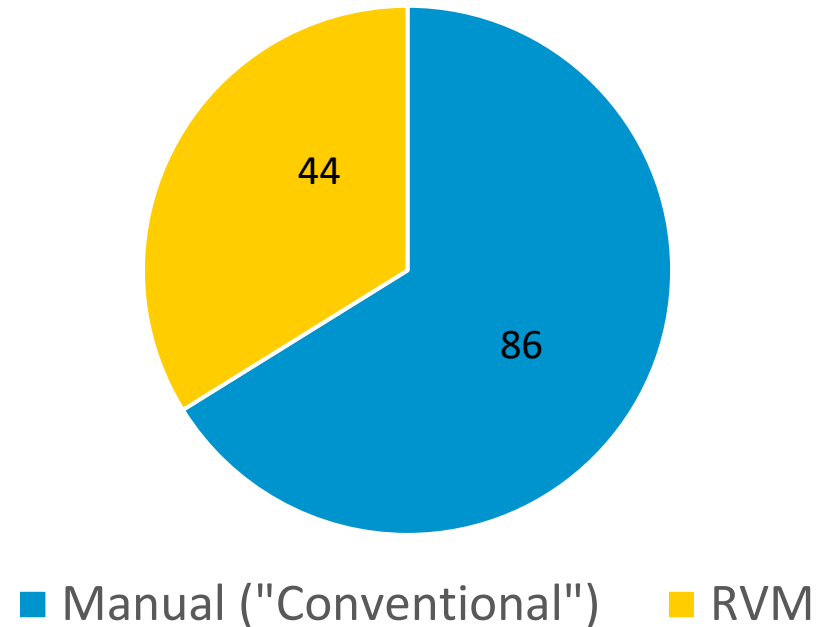
Overview of VT Pick-up Customer Portfolio

TOMRA picks up from 130 locations all across Vermont.
Most are retailers that also choose to operate full redemption centers.

Most frequent pick-up towns/cities



Redemption type by location



1
commingling
group

What We've Learned: High-performing deposit return systems prioritize four principles to frame their program

PERFORMANCE



A collection target for a broad scope of beverage packaging plus a meaningful deposit **delivers strong results.**

CONVENIENCE



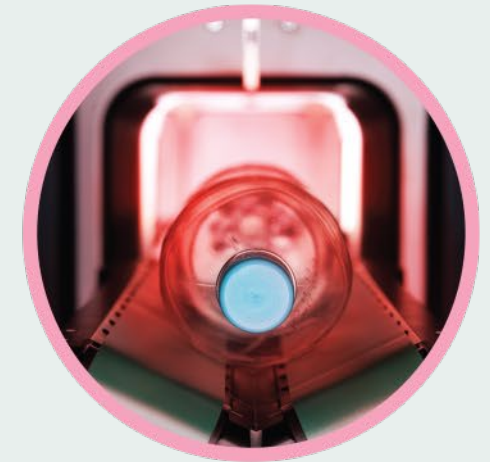
The redemption system is **easy, accessible and fair** for everyone.

PRODUCER RESPONSIBILITY



Producers manage, finance and invest in the system with use of unredeemed deposits and commodity revenues.

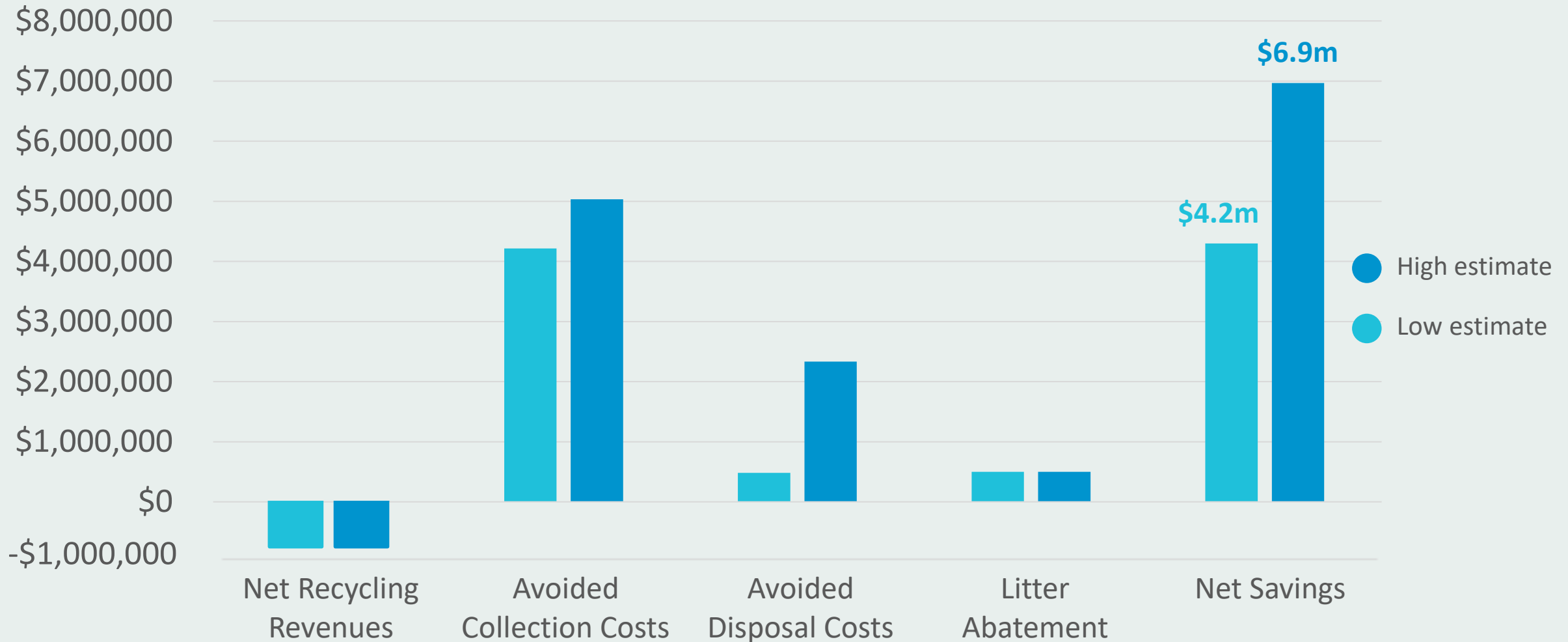
SYSTEM INTEGRITY



Trust is built into the system's processes through transparent management, a data-driven clearinghouse, and reliable redemption technology.

Municipal impacts related to deposit systems

“Municipal Benefits of an Expanded Bottle Bill” (MassDEP 2009)



Further reading

Last updated: July 12, 2019



Deposit Return Systems
Factsheet: Economic Savings for Municipalities



In recent years, there has been renewed interest in deposit-return systems (DRSs) for the recovery of beverage containers. These systems place a small deposit on beverage purchases, which is refunded to the consumer when the empty container is returned for recycling.

As more countries consider DRS as a means to reduce litter and encourage recycling, many are questioning the impacts that such a system would have on municipalities, particularly those that have an existing source separation program in place. The main argument put forward by opponents is that DRSs harm municipalities by diverting recyclables with the most value from the municipal recycling stream, resulting in a reduction of the cost-effectiveness of municipal curbside programs. To support this argument, evidence is provided to show loss of material revenues as well as the industry contributions from extended producer responsibility schemes for packaging where they exist. However, one of the key elements missing in the majority of these analyses is the savings resulting from the reduced or avoided costs of collection, treatment, and disposal by the municipal waste management system.

We wanted to learn more about how municipalities are impacted by the implementation of a DRS, and so we set off on a task to compile all of the research done on the subject over the years. What we found was compelling, and sufficiently closes the case that container deposit systems are good—not bad—for municipalities. The following table presents a compilation of **32 studies** that examined the costs and benefits to municipalities of implementing (or expanding) a DRS for beverage containers. It is noteworthy that, although different in scope,

“Factsheet: Economic Savings for Municipalities”

- Compiles 30+ studies on the impact of deposit systems on municipalities
- <https://www.reloopplatform.org/resources/factsheets/>

Studies on job impacts of a modernized deposit system

Jobs Created by NY's
Current Deposit System



Total Jobs Forecasted for a *Modernized*
NY Deposit System

