

# Vermont Legislative Joint Fiscal Office

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## *ISSUE BRIEF*

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### **The Process of Recycling Bottles in Vermont under Current Law**

**This issue brief reviews the deposit and redemption revenue cycle under current law, looks at how costs are distributed, and raises issues to be considered if the bottle bill were expanded.**

The “bottle bill” – Vermont’s Beverage Container Law (10 V.S.A Chapter 53) – is a successful, state-mandated recycling system. The Vermont container deposit law requires a refundable deposit on the sale of (1) beer or other malt beverages and mineral waters (2) mixed wine drinks and liquor and (3) soda water and carbonated soft drinks. Beverages that are not included are (1) wine and hard cider and (2) water, milk juice, sports drinks and other noncarbonated beverages. The deposit provides a monetary incentive for return of the container, promoting a higher rate of recycling.

#### **The benefits of the bottle bill include:**

1. The bottle bill has a higher return rate (approximately 70 to 80 percent of materials) when compared to Vermont’s recycling system.
2. More greenhouse gas emission reductions are achieved with the bottle bill, due to the higher return rate.
3. The containers collected through the bottle bill are more valuable than those collected via a single stream because they have a lower level of material contamination.<sup>1</sup>
4. Many Vermonters have a high opinion of the cultural aspects of the bottle bill, as returns are often collected by school groups, scouts, homeless persons, etc.

To determine the fiscal impact of the waste stream in Vermont, the Agency of Natural Resources (ANR) commissioned a comprehensive report<sup>1</sup> of the “*existing and foreseeable expansion of the solid waste system...*” This included analysis of the system costs associated with Vermont’s bottle bill in 2013. The costs are detailed in Table 46 of the ANR study, available in the [Appendix](#) of this document.

**The study indicates that in 2013 the bottle bill system operated at a net loss of \$11.6 million.** This is inclusive of a \$3.4 million dollar estimate for trips by consumers to redeem. If redemption trips are combined with other errands the cost may not be directly attributable to the

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<sup>1</sup> ANR Systems Analysis Report, 2013, <http://dec.vermont.gov/waste-management/solid/publications-and-reports>

redemption cycle. The operating costs are summarized in Table 1 and explained throughout the document.

*Table 1: Overview of System Costs*

Components	Total Cost (\$)
State Administration	(21,500)
Distributor	(6,093,816)
Vermont Liquor Control	(190,546)
Retailer/Redemption Center	(304,033)
Consumer	(5,003,025)
Consumer Deposit	(1,554,392)
Additional (Trips to Redeem)	(3,448,633)
<b>Total System Cost</b>	<b>(11,612,920)</b>

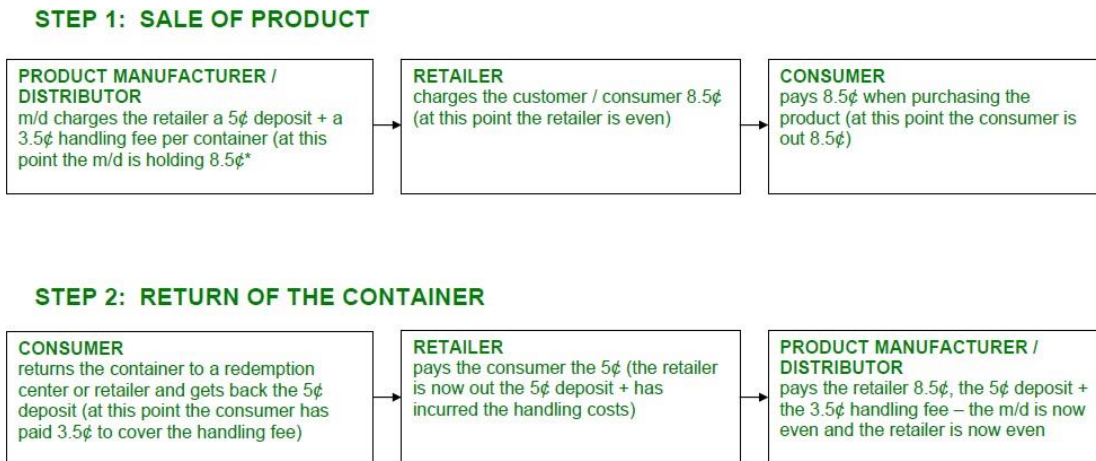
\*Inclusive of separate consumer trips to redeem deposits: \$8.16 million exclusive of trips to redeem.

**Several important factors that influence costs in the system:**

1. The deposit rate or refund value is a minimum of 5 cents for all beverage containers that do not contain liquor. For containers containing liquor with a volume greater than 50ml, the deposit rate is 15 cents.
2. The handling fee is the price paid to the redemption center to cover their manual operation and sorting costs. The cost is 4 cents for containers sorted by brand and 3.5 cents for commingled containers.
3. The transportation costs are those paid by the manufacturers/distributors to collect the bottles from the retail/redemption centers.
4. The scrap value of the recycled containers provides revenue to the system.

The basic flow of the bottle bill is described in Figure 1.

*Figure 1: Deposit and Redemption Revenue Cycle*



Note – Figure 1 assumes the manufacturer/retailer passes on the handling fee (3.5 cents) in addition to the deposit.

Source – Vermont Department of Solid Waste

<http://dec.vermont.gov/sites/dec/files/wmp/SolidWaste/Documents/ChartHowTheMoneyFlows.pdf>

The system begins with the sale of the product from the manufacturer/distributor to the retailer. The manufacturer charges the retailer the deposit value for the container. When the manufactures/distributors pick up the redeemed containers from the retailer or redemption center, they pay back the deposit and additionally are charged a handling fee to compensate for labor and redemption center operating costs.

The unredeemed deposits, the difference between deposits collected and redeemed, are retained by the manufacturer/distributor, except in the case of liquor containers over 50ml. For unclaimed deposits on liquor containers, Vermont's Department of Liquor Control (VLC) retains the money. VLC is the distributor. Annually, the unredeemed liquor and nonliquor deposits are valued at \$0.1 million and \$1.42 million respectively. The handling fees for both commingled and sorted nonliquor containers cost the manufacturer/distributor \$8.76 million. The manufacturer/distributor must also pay for the cost to pick up and transport the redeemed materials. This is an additional cost of \$3.63 million.

**The manufacturer/distributor retains the revenues generated by selling the recycled material on the material market.** The most valuable commodity is aluminum which provides revenues of \$3.75 million, 77 percent of the \$4.87 million collected from the sale of the recyclables.

This leaves the nonliquor manufacturer/distributor with an operating expense of \$6.1 million. It is notable that manufacturers/distributors typically argue that the revenue generated by the unredeemed deposits enable the manufacturer/distributor to offset the losses associated with collection of the redeemed material. **The net operating costs (the handling fee and transportation costs) are likely bundled into the price of the product.** Revenues and expenses for the manufacturers/distributors are highlighted in Table 2 and 3.

Table 2: Revenue/Expense Components for Manufacturers/Distributors

Components	Total Cost (\$)
<b>Revenues</b>	
<i>Deposits Collected</i>	13,519,145
<i>Deposits Redeemed</i>	(12,097,439)
Unredeemed Deposits	1,421,706
<i>Material Revenue (Scrap Value)</i>	
<i>Aluminum</i>	3,750,899
<i>Plastics</i>	789,228
<i>Glass</i>	332,129
Total Material Revenue	4,872,256
<b>Total Revenues</b>	<b>6,293,962</b>
<b>Expenses</b>	
Handling Fees	(8,758,546)
<i>Commingled</i>	(6,435,838)
<i>Sorted</i>	(2,322,708)
Collection Costs	(3,629,232)
<b>Total Expenses</b>	<b>(12,387,778)</b>
<b>Manufacturer/Distributor Operating Cost</b>	<b>(6,093,816)</b>

Table 3: Revenue/Expense Components for Vermont Liquor Control

Components	Total Cost (\$)
<b>Vermont Liquor Control</b>	
<b>Revenues</b>	
Deposits Collected	561,755
Deposits Redeemed	(429,069)
<b>Expenses</b>	
Collection Cost	(223,116)
Handling Fees Paid Out	(100,116)
<b>VLC Operating Cost</b>	<b>(190,546)</b>

The study also reported costs and revenues at the level of the retailers/redemption centers. Retailers or redemption centers receive the handling fees from the manufacturer valued at \$8.76 million to cover their operating costs of \$8.2 million for manual labor and \$0.8 million for costs associated with the reverse vending machines typically located at retail locations. As a whole, retailer/redemption centers operate at a loss of \$0.3 million. As highlighted in a 2007 study on *The Cost of Beverage Container Redemption in Vermont*,<sup>2</sup> whether the handling fee covers the cost per container depends on the size, output, and type of facility. It is noted that this study was completed prior to the commingling agreement, but it remains a valid representation of differentiation. A chart detailing monthly throughput and cost per container is available in the [Appendix](#).

<sup>2</sup> ANR Report: Cost of Beverage Redemption Centers in Vermont, 2007, <http://dec.vermont.gov/sites/dec/files/wmp/SolidWaste/Documents/DSMReportJune2007.pdf>

The revenue and expense components for the retailers and redemption centers are detailed in Table 4. Not all retailers are redemption centers: with approval from the Secretary of Natural Resources, a retailer may choose not to redeem beverage containers if there is a certified redemption center within a 5-mile radius of the retailer.

*Table 4: Revenue/Expense Components for Retailers and Redemption Centers*

<b>Components</b>	<b>Total Cost (\$)</b>
<b>Revenues</b>	
Handling Fees Received	<b>8,758,546</b>
<b>Expenses</b>	
RVM (Reverse Vending Machine)	(822,626)
Manual Costs	(8,239,953)
<b>Total Expenses</b>	<b>(9,062,579)</b>
<b>Retailer/Redemption Center Operating Cost</b>	<b>(304,033)</b>

Consumers pay at the time of purchase for the redeemed and unredeemed deposits from containers, including liquor and nonliquor, equating to an expense of \$14.1 million. Upon recycle/return of the container the consumer gets back the deposit at a value of \$12.5 million, \$0.4 million from liquor containers and \$12.1 million from nonliquor bottles. The value of the unreturned liquor and nonliquor containers is \$1.55 million.

An additional system cost to the consumer is the cost of driving the containers to the redemption centers/retailers. This cost is estimated at \$3.4 million. It is noted that this is not fully a cost to the recycling system as often redemption trips are combined with other errands and therefore cannot be completely allocated to the redemption costs. The consumer will also pay for the handling fee built into the price of the product. The revenues and expenses to the consumer appear in Table 5.

*Table 5: Revenue/Expense Components for Consumers*

<b>Components</b>	<b>Total Cost (\$)</b>
<b>Revenues</b>	
Deposits Received	12,097,439
Liquor Deposits Received	429,069
<b>Total Revenues</b>	<b>12,526,508</b>
<b>Expenses</b>	
Deposits Paid	(13,519,145)
Liquor Deposits Paid	(561,755)
<b>Total Expenses</b>	<b>(14,080,900)</b>
<b>Consumer Subtotal</b>	<b>(1,554,392)</b>
Additional Cost (Trips to Redeem)	(3,448,633)
<b>Consumer Operating Cost</b>	<b>(5,003,025)</b>

## Issues to Consider in Expansion Proposals

In considering an expansion of the bottle bill, which would include the addition of wine, hard cider, water, juice, sports drinks, and other noncarbonated beverages, there are several factors to consider:

**1. Transportation costs of collection:** The cost of collecting the material would increase under an expanded bottle bill, making it more of a burden to manufactures and raising the question of how this cost will be distributed.

**2. Unredeemed Deposits:** The data presented in the ANR report assumes that the unredeemed nonliquor deposits under the expanded bill are still maintained by the distributor/manufacturer to offset the increased collection costs.

**3. Material Revenues:** Revenues from the scrap value of the redeemed containers – recycled aluminum, glass, and plastics – currently accrue to the manufacturers or distributors. Expansion of the bottle bill would increase the number of containers collected by the distributor/manufacturer and subsequently increase the revenues received on the sale of the recycled material.

The beverage containers in question would be removed from the current Vermont single-stream recycling system and material recovery facilities, effectively reducing the material revenue available to the Vermont single stream system. This additional material is valued at \$1.2 million. In considering expansion, it is important to think about how this revenue loss would affect the single stream waste system in place in Vermont, which already struggles with the value of material available.

**4. Business Control:** Currently the bottle bill is applied to large franchises, such as Coke, which have just one or two distribution centers throughout the State, and regulated enterprises such as beer. This enables control of the system through the points of sale. An expanded bottle bill would include beverage types such as energy drinks that have multiple distribution outlets and points of sale, complicating the process of registering items sold and returning the containers to the distributor.

**5. Glass:** Under the current bottle bill, glass makes up 70 percent of the containers by weight and only 12 percent by number of containers returned. It is the most expensive commodity to transport. Bottle bills for just glass have been proposed. The benefit of a bottle bill for glass separated from other materials is that glass is very difficult to handle in a single stream waste system, as it is fragile and breaks. The broken pieces often get mixed with small plastics (under 2 inches) that contaminate the recyclable commodity. Keeping glass separate, as currently done in the bottle bill, increases the value and usefulness of the recycled product.

In 1993 a report, “*Bottle Bills and Curbside Recycling: Are They Compatible*”<sup>3</sup> was prepared for the United States Congress. The report is available in the [Appendix](#) of this document. **The report reiterates the factors examined in this issue brief and discusses the successes of curbside and deposit-funded systems as a means of collecting beverage containers with respect to (1) the amount of material collected, (2) the quality of the material collected and (3) the cost factors.**

The key findings reflect that bottle bills and curbside collection programs are not mutually exclusive.

### **1. Amount of Material Collected:**

- Deposit systems collect more of their target materials than curbside programs.
- Curbside programs can target a wider range of materials and therefore have a higher potential to achieve greater diversion of waste.

### **2. Quality of the Material Collected:**

- Deposit-refund system bottles and cans are sorted and handled individually and therefore have a higher quality than commingled curbside collection.

### **3. Cost Factors:**

- Deposit-refund materials cost more per ton collected. The costs are internalized in product price and therefore are assured financing.
- If provided by the municipality curbside systems are dependent on tax revenues; therefore the costs of recycling are paid by the taxpayers, whether or not they consume the affected products. Additionally the ability to maintain and expand curbside recycling is dependent on government budgets.
- It is often surmised that deposit systems skim the most valuable material (aluminum) from curbside programs, adversely influencing the economics of curbside recycling. **The report indicates that the cost reduction from the removal of beverage containers from curbside collection is greater than the commodity revenue loss.**

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<sup>3</sup> McCarthy, J. E. (1993). *Bottle Bills and curbside recycling: Are they compatible?*. Congressional Research Service, Library of Congress.

## Example States

Ten states, including Vermont, currently have enacted bottle bills. In Vermont, Oregon, and Iowa the deposit is retained by the manufacturer/distributor. It is also of note that California and Hawaii are the only two states where the scrap value of the returned material is retained by the redemption center as opposed to the distributor.

### California:

California's bottle bill was enacted in 1986. The program was expanded in 2000 to include all nonalcoholic and alcoholic beverage containers, excluding milk and vegetable juices over 16 ounces.<sup>4</sup> The unredeemed deposits are the property of the state and are retained in the CalRecycle Fund; the funds are used for administrative program costs, grants, and to supplement curbside recycling programs.

In the California program **distributors (not manufacturers) pay the deposit to CalRecycle. The cost of these payments is passed on to the consumer at the point of sale.** Consumers are paid the refund when they return empty beverage containers to certified recycling centers. Additionally, consumers may elect to **donate their recyclables to community service programs or a curbside recycling program (helping to fund curbside programs).** Both redemption centers and curbside recycling programs are operated by independent businesses and/or municipalities, not the state. In order to enable curbside recycling, a statewide commingled rate for each material *by program type (curbside or recycling center)* is set annually; the value is paid by weight.

For example, at a recycling center if a consumer returns more than 50 containers, the consumer would be paid by weight: \$1.57 per pound for aluminum, \$1.00 for PET plastic, \$0.57 for HDPE plastic (similar to large water jugs) and 10.5¢ for glass bottles.

Another unique feature of the California bottle bill is that the manufacturer of beverage containers must pay a processing fee that offsets the cost differential between the costs to recycle that container and the value of the recycled material on the market (scrap price). **The processing fee is much higher for difficult-to-recycle container types, providing an incentive for manufacturers to use more readily recyclable materials.** The revenue from the processing fee is allocated to the CalRecycle Fund.

The revenue generated in the CalRecycle fund from the processing fees and unclaimed deposits is used to support the system. **In place of a handling fee, California provides a subsidy from the CalRecycle fund to local recyclers to promote wider geographic disposal.**

A flow chart for the California program is included in the [Appendix](#).

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<sup>4</sup>CalRecycle <http://www.calrecycle.ca.gov/bevcontainer/programinfo/>



## **Delaware:**

In June 2010, the bottle bill in Delaware was repealed due to a low recovery rate, and containers were added to the single-stream recycling system.<sup>5</sup> In order to facilitate the transition, a temporary 4 cent tax was implemented on the sale of previously redeemable containers. The money raised was allocated to a temporary recycling fund and used to expand recycling programs. Ensuring compliance following the repeal proved difficult. The fee was automatically removed in 2014.

## **Massachusetts:**

The bottle bill in Massachusetts was enacted in 1983. The bill applies to beer, malt, carbonated soft drinks and mineral water.<sup>6</sup> The Massachusetts legislature is also working through expansion or repeal of the bottle bill.

The current system in Massachusetts is very similar to that in Vermont with the exception of collection of unredeemed deposits. **In Massachusetts the unredeemed deposits are maintained by the state** (enacted in 1995). This is done through the Department of Revenue. **The distributor must set up a Deposit Transaction Fund and report monthly:** (1) the number of nonreusable beverage containers sold and the number of nonreusable beverage containers returned in the month, (2) the amount of deposits made into and from the fund in the current month as well as during the most recent three-month period, (3) any income earned on amounts in the deposit fund (interest) in the past month, and (4) the current value of the fund at the close of the month.

At the end of each month the distributor must remit the unredeemed deposits: calculated as the amount in the fund that is in excess of (a) income earned on the amount in the account and (b) the total amount of refund values received by the distributor during that month. The value of unredeemed deposits in the preceding two months must also be reported. The interest income earned on the fund is the property of the bottler or distributor.

**There is no commingling agreement in Massachusetts.** The distributor must refund the deposit to the redemption center or retailer, plus a handling fee of 3.25 cents for a redemption center and 2.25 cents for a retailer.

## **Maine:**

The Maine bottle bill was enacted in 1976 and expanded in 1990 to include wine, liquor, water, and nonalcoholic carbonated and noncarbonated drinks.<sup>7</sup> The current law covers all beverage containers except dairy and Maine-produced apple cider or blueberry juice.

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<sup>5</sup>Delaware Division of Waste and Hazardous Substances  
<http://www.dnrec.delaware.gov/dwhs/Recycling/Pages/BottleBill.aspx>

<sup>6</sup>Massachusetts Office of Energy and Environmental Affairs  
<http://www.mass.gov/eea/agencies/massdep/recycle/reduce/bottle-and-can-recycling.html>

<sup>7</sup> Maine Sustainability <https://www1.maine.gov/dep/sustainability/bottlebill/index.html>

In 1991, the state implemented a provision that 50 percent of all unredeemed deposits would be returned to the state and 50 percent would be retained by the distributors. This was repealed one year later. In 2003, another modification was proposed in which **unredeemed deposits on any container not part of an approved commingling agreement become property of the state.** The funds are tracked through a Deposit Transaction Fund.

Similar to Vermont, the handling fee is 4 cents per container and 3.5 cents for commingled containers.

### **New York:**

The New York bottle container law was enacted in 1982. The bill pertains to carbonated soft drinks, soda water, beer and other malt beverages, wine, and water that does not contain sugar, including flavored or nutritionally enhanced water (added in 2009).<sup>8</sup>

In 2009, the New York bottle bill was reformed so that **80 percent of the unredeemed deposits are collected by the state and 20 percent are retained by the distributor.** The state funds flow into the General Fund, \$15 million of which are dedicated to the Environmental Protection Fund (EPF).

Deposits are tracked through “deposit initiators,” defined as the first bottler, distributor, dealer, or agent to collect the refund value (deposit) on a beverage container sold in New York. **The deposit initiator must deposit the refund value into a refund value account, and quarterly reports must be filed.** The reports include all deposits credited to the account, all interest earned and all withdrawals (deposit reimbursements) from the account. In the event that the deposit initiator pays out more in refund values than it collects, then the deposit initiator may apply for a refund of the excess payment. No interest is payable on the refund. **The deposit initiator must make arrangements for the pick-up and processing of empty containers and pay dealers and redemption centers for the deposit and a 3.5 cent handling fee.**

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<sup>8</sup> New York Department of Environmental Conservation <http://www.dec.ny.gov/chemical/8500.html>

## Specifics of Current Law in Vermont

The bottle bill steps are visually explained in Figure 1.

**The product manufacturer charges the retailer the deposit per container. A retailer sells the beverage to the consumer at a cost inclusive of the deposit. Although not required by law, the handling fee is generally passed to the consumer by the manufacturer through the cost of the product.**

Beverage companies are required to register each beverage container with the Agency of Natural Resources prior to sale and include the following: (1) the name and principal business address of the manufacturer, (2) the name of the beverage container and size, (3) whether the beverage is part of an approved commingling agreement and (4) the name of the person picking up the empty container, if different from the manufacturer.

Every beverage container sold or offered for sale in the State of Vermont must be clearly labeled with the word “Vermont” or “VT” and the refund value. Redemption centers and retailers must not accept any containers that are not labeled with the Vermont refund value.

The law prohibits the sale of certain types of containers in the State: (1) metal containers with parts that detach during opening (other than a piece of pressure sensitive tape) and (2) containers that are connected to each other with plastic rings or other non-biodegradable parts.

Vermont’s bottle bill law is beverage-type legislation as opposed to container-based legislation; it applies to the type of beverage for inclusion and not container type for inclusion. *This is useful because if a product is sold in a container that does not have an established scrap market, it discourages the sale in that container type.*

**The consumer returns the container to a retailer or redemption center and gets back the deposit. The product distributor/manufacturer pays the retailer/redemption center the deposit and handling fee.**

A retailer must only accept containers of brands that the retailer sells. With prior approval from the Secretary of Natural Resources and if there is a certified redemption center within a 5-mile radius, a retailer may refuse to redeem beverage containers.

A retailer or redemption center that redeems containers will be reimbursed by the manufacturer (1) 3.5 cents for commingled containers or (2) 4 cents for containers that are sorted by brand. If a certified redemption center redeems more than 250,000 containers per year, it must participate in an approved commingling agreement. A certified redemption center must be open no fewer than 40 hours per week.

The minimum requirements for beverage brands that want to commingle containers to qualify for a lower handling fee are defined in §10-109 of the Department of Environmental Conservation regulations.

A manufacturer/distributor may not refuse to pick up containers from a retailer or redemption center or refuse to pay the deposit or handling fee.

**At the end of the cycle, the manufacturer and retailer have made up their costs associated with the deposit. The “cost” of recycling – the handling fee – is built into the product price and essentially paid by the consumer.**

If the nonliquor container is not redeemed, the manufacturer retains the deposit and the handling fee.

The difference between liquor bottle deposits collected and refunds claimed is retained by the Liquor Control Fund