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Preliminary Survey

Comparison of Beverage Pricing, Consumer Choice and Redemption System Performance in Massachusetts and Neighboring States

The Massachusetts Department of Environmental Protection (MassDEP)

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EXECUTIVE SUMMARY

The Massachusetts Bottle Deposit Law (BDL), implemented in 1983, places a five cent deposit on all carbonated soft drinks, beer, malt beverages and sparkling water sold in Massachusetts with the assurance that consumers can redeem their empty beverage containers for a nickel. The BDL has demonstrated success in removing beverage containers from our parks, our landfills, and our public ways, so much so that BDL-covered beverage containers are the most recycled product in Massachusetts. Since the passage of this successful law, the marketplace has diversified and now includes additional beverage products that are not covered by the deposit. In order to address these changes in consumer preferences for bottled beverages, Governor Deval Patrick and Lieutenant Governor Tim Murray, almost 200 municipalities, and numerous legislators have supported an amendment to the BDL to include non-carbonated products such as water, flavored water, coffee-based drinks, juices, teas and sports drinks.

The Patrick-Murray Administration supports an update of the BDL because more beverage containers will be recycled, litter will be reduced, and municipalities will save money in trash disposal costs. Opponents argue that an update of the BDL will increase consumer and retailer costs, reduce consumer choice and impose significant new burdens on retailers. In fact, in a December 10th, 2010 letter, opponents predicted that the updated bottle bill will cost $116 million per year and increase the cost of each beverage by approximately five cents (above the refundable deposit).

Many claims have been made to suggest an updated bottle deposit law will cause Massachusetts to suffer. However, these claims about the negative impact of updating the law need to be examined to insure that a balanced and fair discussion can ensue. The information gathered in this preliminary survey attempts to address a variety of issues raised by opponents of an updated BDL, specifically claims of increased product pricing, decreased product availability and increased retailer and consumer inconvenience and cost.

Preliminary survey findings suggest:

- The BDL results in no difference in price between beverages;
- The BDL results in no difference in consumer choice; and
- Sufficient infrastructure and capacity exists to handle the additional beverage containers of an updated BDL.

To assess whether amendments to the Bottle Deposit Law might increase consumer prices and retailer costs, reduce consumer choice, and overly burden retailers, MassDEP conducted a preliminary survey. The Department collected and compared information from Massachusetts and surrounding states on beverage pricing and product availability, and conducted interviews with store managers and others in states with an updated BDL to see if the negative impacts predicted by opponents for Massachusetts have been experienced elsewhere. The Department surveyed four states: Massachusetts, which has a deposit on carbonated beverages, New Hampshire, which has no deposit law, Connecticut, which imposes a deposit on carbonated beverages and water, and Maine, which has a deposit on carbonated drinks, water, flavored water, juices, and other beverages.

MassDEP compared beverage prices in common supermarket chains and various common retail outlets; assessed product availability across states; and conducted interviews with retailers and third party service providers about operational issues.

Conclusions:

Price Increases: MassDEP's survey suggests that the presence of a bottle deposit law does not have a discernable effect on the retail price of beverages. Beverages surveyed often cost more, not less, in states without a BDL than in states with a BDL. The survey also suggests supermarkets with regional operations have remarkably consistent beverage pricing for both deposit and non-deposit beverages across states, regardless of whether the state has a BDL. This information raises questions about the validity of claims that bottle deposit laws raise prices.

Consumer Choice: MassDEP's survey indicates a similar trend with respect to consumer choice. While some predict that an updated bottle law leads to less consumer choice, the presence or absence of a deposit did not appear to influence the availability of beverages surveyed. For example, in Maine (which does have a deposit on water drinks), stores surveyed had more products available than in Massachusetts stores, where similar products currently do not require a deposit.

Operational Issues: MassDEP's interviews with store managers, Reverse Vending Machine (RVM) manufacturers, and state administrators suggest that problems in administering the deposit systems were minimal, and that in states with updated BDLs, no additional administrative issues were identified beyond those that were already in existence prior to the update of the law. The infrastructure required for an update of the BDL is already in place and has sufficient capacity to handle the increase in beverage containers. Based on experiences in other states, MassDEP did gain insight into how best to define the beverages to be covered in an updated BDL that would maximize the use of existing operational infrastructures and minimize costs for managing the system. Our review suggests that an updated bottle bill that excludes bottles larger than three liters, and juice bottles of all sizes, could be easily implemented in Massachusetts stores with the existing infrastructure.

Summary:

MassDEP's preliminary survey revealed no evidence to support claims that updating the Massachusetts BDL will result in increased costs or reduced consumer choices. The Patrick-Murray Administration urges the Legislature to consider this perspective as it continues to consider proposals to update the Massachusetts BDL.

I. INTRODUCTION

The Massachusetts Bottle Deposit Law (BDL), implemented in 1983, places a five cent deposit on all carbonated soft drinks, beer, malt beverages and sparkling water sold in Massachusetts with the assurance that consumers can redeem their empty beverage containers for a nickel. As the beverage industry has grown to include a number of new products in the past 28 years, Governor Patrick , Lieutenant Governor Murray, dozens of legislators, and almost 200 municipalities, have supported an update to the BDL to include non-carbonated products such as water, flavored water, coffee-based drinks, juices, teas and sports drinks.

The Administration sees the benefits of an updated BDL to include:

1) Increased recycling. More than one billion non-carbonated beverage containers end up as litter, buried in landfills or burned in incinerators each year.[1] 750 million of those will be diverted from the solid waste stream as a result of an updated BDL.
2) Cleaner parks, beaches and highways. Litter cleanup groups observe four times as many non-deposit beverage containers as they do deposit containers during regular cleanups.[2]
3) Budget savings for cities and towns. According to a recent MassDEP study, an updated BDL would save Massachusetts cities and towns an estimated $7 million per year in combined trash collection and disposal.[3]

Distributor and retailer opposition to the updated BDL is centered on a number of predictions about the effect of an update that would add additional beverage containers to the law.

According to industry statements[4], an updated BDL will lead to:

1) Increased consumer prices, or "another $116 million per year for groceries," a 10-cent increase per container. This includes the 5-cent recoverable deposit.
2) Increased cost to retailers because of the need for "more reverse vending machines (RVMs) to handle additional empties: that means more costs to lease and maintain the machines, costs to remodel stores, and lost sales space for retailers."
3) Inconvenience to retailers from "a big increase in containers that can't go through RVMs because of their size or composition: that means longer waits for consumers and more staff and much more space needed to handle those bottles and cans in the stores."

In addition, during a MassDEP site visit and informational meeting with the Massachusetts Food Association (MFA), MFA stated that an updated BDL may also reduce consumer choice at the retail level because retailers may want to limit their redemption obligations by not stocking these products.

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[1] "Top Five Reasons Massachusetts Needs an Expanded Bottle Bill." Massachusetts Department of Environmental Protection. http://www.mass.gov/dep/recycle/5reasons.htm

[2] "Beverage Containers in Litter and Public Area Waste Receptacles." Massachusetts Department of Environmental Protection. September 2009.

[3] "Analysis of the Impact of an Expanded Bottle Bill on Municipal Recycling Costs and Revenues." Massachusetts Department of Environmental Protection. July 2009.

[4] December 10, 2010 correspondence to state legislators.

After hearing these claims, MassDEP decided to collect information about the experience of other states that have updated bottle deposit laws to see if that experience corroborates these predictions.

In May, June and July of 2011, MassDEP collected data on beverage pricing, product availability and redemption systems in states with a full BDL (Maine), an updated BDL (Connecticut – water only), and no deposit law at all (New Hampshire), as well as Massachusetts. In addition, we interviewed retailers and third party service providers on operational aspects of the redemption process. This effort included conversations with representatives in Connecticut, Maine, Massachusetts and New York (updated BDL – water only).

II. SURVEY SCOPE

Maine's BDL includes all beverage containers four liters or less, while Connecticut's BDL includes soft drinks, beer, malt beverages and bottled water three liters or less. Massachusetts' BDL, as mentioned previously, currently covers soft drinks, beer, malt beverages and sparkling water. New Hampshire does not have a BDL. MassDEP looked at various types and sizes of non-alcoholic beverages that are sold with or without bottle deposits, depending on the state in which they are sold. Only non-alcoholic beverages were included because the proposed update of the Massachusetts BDL has not, to date, considered wine or liquor. Four components were surveyed: price comparisons between states for specific supermarket chains, pricing at various retail outlets across states, product availability, and interviews with retailers and third party service providers on operational issues.

a) Supermarket Beverage Prices

Supermarkets sell significant quantities of beverages of the types proposed to be covered by an updated Massachusetts BDL, so MassDEP compared prices for these beverages at supermarkets in multiple New England states. Supermarket locations were selected by identifying border communities in each region of interest and searching for supermarkets located within a distinct radius of those communities. MassDEP conducted a regional survey to understand if the presence of a BDL had an effect on beverage pricing and if it confirmed the oft-cited concern of consumers driving across borders to purchase less expensive products in non-BDL states. A list of beverages for which pricing information was sought is available in Attachment A.

The first border community MassDEP chose was Kittery, ME, to explore the relationship between beverages sold in Massachusetts and Maine supermarkets. Hannaford supermarkets and Shaw's supermarkets are the two largest supermarket chains operating in both Massachusetts and Maine.

Store locator tools from the Hannaford and Shaw's websites were used to search for all Massachusetts and Maine stores within a 50-mile radius of Kittery. This produced a list of 42 stores. Price data was collected at 17 stores (nine in MA, eight in ME) during the week of June 6, 2011, representing 40.4 percent of Hannaford and Shaw's supermarkets in these two states within 50 miles of the Maine border at Kittery.

Additionally, nine Hannaford and Shaw's New Hampshire locations were included in the comparison, each falling within the 50-mile radius of Kittery, ME. Data was collected via in-store visits to Shaw's locations and via online price checks for Hannaford locations, with online data verified at three Hannaford locations in Massachusetts, Maine and New Hampshire. A complete list of supermarkets examined is available in Attachment A.

The second border community MassDEP chose was Longmeadow, MA, to explore the relationship between beverages sold in Massachusetts and Connecticut supermarkets. Big Y and Stop & Shop supermarkets are two of the largest supermarket chains operating in both Massachusetts and Connecticut.

Store locator tools from the Big Y and Stop & Shop websites were used to search for all stores within a 20-mile radius of Longmeadow. This produced a list of 44 stores. Price data was collected at ten stores (five in CT, five in MA), representing 22.7 percent of the Stop & Shop and Big Y supermarkets within 20 miles of Longmeadow, MA. Data was collected via in-store visits to both Big Y and Stop & Shop locations the week of June 6, 2011.

After obtaining price data for a total of 27 stores (five in Connecticut, 14 in Massachusetts, eight in Maine and nine in New Hampshire), beverage price comparisons by state were developed for each supermarket chain.

b) Expanded Retail Beverage Prices

To compare beverage prices in multiple New England states from a broader set of retailers, additional beverage pricing was gathered from other supermarket chains, drugstores and convenience stores. A complete list of stores used for this exercise is available in Attachment B. In-store visits were conducted at a number of locations within the supermarket study areas (near Kittery and Longmeadow) and in the greater Boston area, while phone calls were placed during the week of May 16, 2011 to convenience stores, many in the border communities of Connecticut, Massachusetts, Maine and New Hampshire. A total of 30 stores were surveyed via phone, while at the same time in-store data was generated for an additional 16 locations.

Data was collected on a smaller range of beverages than those examined in the supermarkets above to ensure comparative data. A complete list of beverages surveyed is available in Attachment B. Price points for beverages found previously at supermarkets were included in the expanded retail section.

Beverage price comparisons were developed for all retailers surveyed, using data from all retailers, to compare beverages state-to-state and by type of retailer. Regression analysis was used to assess the relationship between beverage pricing and other factors (state sold, type of retailer, store chain).

c) Consumer Choices

To assess the availability of beverages, online store inventories were surveyed for five Hannaford stores in Massachusetts and five Hannaford stores in Maine during the week of July 4, 2011. In addition, online store inventories for four Stop & Shop stores in Massachusetts and five in Connecticut, though Pea-pod, were examined during the same week. Hannaford and Stop and Shop were the only retail outlets identified that provided an online list of available beverages for individual stores. A list of stores surveyed is available in Attachment C. A variety of beverages that have been proposed for inclusion in an updated Massachusetts BDL were chosen, and the selection size of these beverages was tabulated for each store location.

In addition, information obtained from third party reverse vending machine (RVM) service providers regarding the capabilities of these machines to accept beverages that would be included in an updated Massachusetts BDL was reviewed to assess whether an updated BDL would impact decisions by supermarkets on the variation of beverages offered due to difficulty in providing redemption services.

d) Interviews

Interviews were conducted with supermarket store managers/officials in Massachusetts, Connecticut, Maine and New York, in person and via telephone, to obtain information on the operational aspects of the BDL on a retail level in those states. New York was included in this effort because New York's recently updated BDL is similar to Connecticut's in that it includes soft drinks, beer, malt beverages and bottled water, less than a gallon in size (CT is three liters or less). A sample questionnaire and list of stores surveyed is available in Attachment D.

To further understand any operational issues of an updated BDL in neighboring states, RVM manufacturers servicing these states, who also serve as third party collection agents on behalf of distributors for retail locations, were asked about the ability of their machines to handle beverage containers under the current Massachusetts BDL and how their technology accommodated both the volume and range of products included in recent BDL updates in Maine, Connecticut and New York. A list of those questions is available in Attachment D.

III. RESULTS

a) Supermarket Prices

Prices of beverages commonly found at regional supermarket chains with a presence in Massachusetts and Connecticut, Maine and/or New Hampshire are shown below. A table has been prepared for each specific supermarket chain within the sampling. See Attachment A for list of supermarkets included in the sampling.

The survey suggests that Shaw's beverage pricing (see Table 1) was consistent across Maine, Massachusetts and New Hampshire. For example, a 20 oz coke sells for $1.57 in Massachusetts (a bottle deposit state), $1.59 in Maine (a bottle deposit state) and $1.59 in New Hampshire (not a bottle deposit state). Non-carbonated beverages sold at Shaw's supermarkets in Maine with a deposit were not more expensive than the same beverages sold in Massachusetts and New Hampshire where no deposit applies. In fact, several of these beverages were actually cheaper in Maine than Massachusetts. In several cases, the mean price of a particular beverage in one state was altered by the presence of a single data point, but the rest of the data points held consistent with the values in the other states (exhibited by the mode price). Other findings from the data include:

- Aquafina cost a penny more in some New Hampshire and Maine stores than in Massachusetts. This increase probably is not a factor of the BDL as only one of those states (Maine) has a deposit for water.
- In multiple instances, a Gatorade 8-pack was less expensive in Maine, where it carries a deposit, than in Massachusetts or New Hampshire where it does not.
- A 12-pack of Polar ginger ale was less expensive in Maine, where it carries a bottle deposit, than in New Hampshire where it does not.
- Lipton Brisk 2L, was less expensive in Maine, with a deposit, than in Massachusetts and New Hampshire, with no deposit

Table 1 - Shaw's Price Comparison

	Massachusetts				Maine				New Hampshire			
Product	**Mean**	**Mode**	**Med**	**Range**	**Mean**	**Mode**	**Med**	**Range**	**Mean**	**Mode**	**Med**	**Range**
Coke 20 oz	$1.57	$1.59	$1.59	$0.10	$1.59	$1.59	$1.59	$0.00	$1.59	$1.59	$1.59	$0.00
Coke 12-pack	$4.99	$4.99	$4.99	$0.00	$4.99	$4.99	$4.99	$0.00	$4.99	$4.99	$4.99	$0.00
Vitamin Water 20 oz	$1.29	$1.29	$1.29	$0.00	$1.29	$1.29	$1.29	$0.00	$1.29	$1.29	$1.29	$0.00
Poland Spring 1.5L	$1.19	$1.19	$1.19	$0.00	$1.39	$1.19	$1.19	$0.60	$1.22	$1.19	$1.19	$0.10
Poland Spring 12-pk	$3.69	$3.69	$3.69	$0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P. Spring Sport 12-Pk	$6.49	$6.49	$6.49	$0.00	$5.89	$6.49	$6.49	$1.50	$6.05	$6.49	$6.37	$1.50
Poland Spring 24-pk	$4.97	$4.99	$4.99	$0.09	$4.99	$4.99	$4.99	$0.00	$4.99	$4.99	$4.99	$0.00
Aquafina 20 oz	$1.49	$1.49	$1.49	$0.00	$1.50	$1.50	$1.50	$0.00	$1.50	$1.49	$1.50	$0.01
Aquafina 24-pack	$4.76	$4.99	$4.99	$0.70	$4.99	$4.99	$4.99	$0.00	$4.99	$4.99	$4.99	$0.00
Polar Ginger Ale 1 L	$1.15	$1.15	$1.15	$0.00	$1.15	$1.15	$1.15	$0.00	$1.15	$1.15	$1.15	$0.00
Polar GA 12-Pack	$4.79	$4.79	$4.79	$0.00	$4.55	$4.49	$4.49	$0.30	$4.79	$4.79	$4.79	$0.00
Polar Seltzer 1 L	$1.15	$1.15	$1.15	$0.00	$1.15	$1.15	$1.15	$0.00	$1.15	$1.15	$1.15	$0.00
Polar Seltzer 12-pack	$4.59	$4.49	$4.49	$0.30	$4.49	$4.49	$4.49	$0.00	$4.49	$4.49	$4.49	$0.00
Gatorade 32 oz.	$1.25	$1.25	$1.25	$0.00	$1.27	$1.25	$1.25	$0.04	$1.26	$1.25	$1.25	$0.04
Gatorade 8-pack	$7.99	$7.99	$7.99	$0.00	$7.17	$7.29	$7.29	$0.30	$7.57	$7.99	$7.64	$1.00
Coca-Cola 2 L	$1.59	$1.59	$1.59	$0.00	$1.59	$1.59	$1.59	$0.00	$1.59	$1.59	$1.59	$0.00
Lipton Brisk 2 L	$1.67	$1.69	$1.69	$0.10	$1.59	$1.59	$1.59	$0.00	$1.67	$1.69	$1.69	$0.00
Lipton Brisk 12-pack	$4.99	$4.99	$4.99	$0.00	$4.99	$4.99	$4.99	$0.00	$4.99	$4.99	$4.99	$0.00

Table 2 - Hannaford Price Comparison

	Massachusetts				Maine				New Hampshire			
Product	**Mean**	**Mode**	**Med**	**Range**	**Mean**	**Mode**	**Med**	**Range**	**Mean**	**Mode**	**Med**	**Range**
Coke 20 oz	$1.59	$1.59	$1.59	$0.00	$1.59	$1.59	$1.59	$0.00	$1.59	$1.59	$1.59	$0.00
Coke 12-pack	$2.67	$2.50	$2.50	$0.83	$3.33	$3.33	$3.33	$0.00	$3.33	$3.33	$3.33	$0.00
Vitamin Water 20 oz	$1.00	$1.00	$1.00	$0.00	$1.00	$1.00	$1.00	$0.00	$1.00	$1.00	$1.00	$0.00
Vitamin Water 32 oz	$1.55	$1.55	$1.55	$0.00	$1.55	$1.55	$1.55	$0.00	$1.55	$1.55	$1.55	$0.00
Poland Spring 1.5L	$1.19	$1.19	$1.19	$0.00	$1.19	$1.19	$1.19	$0.00	$1.19	$1.19	$1.19	$0.00
Poland Spring 12-pk	$3.56	$3.89	$3.89	$1.00	$4.19	$4.19	$4.19	$0.00	$3.89	$3.89	$3.89	$0.00
P. Spring Sprt 12-Pk	$3.92	$3.92	$3.92	$0.03	$4.59	$4.59	$4.59	$0.00	$3.92	$3.92	$3.92	$0.00
Poland Spring 24-pk	$4.44	$4.44	$4.44	$0.45	$4.44	$4.44	$4.44	$0.00	$4.44	$4.44	$4.44	$0.00
Aquafina 20 oz	$1.59	$1.59	$1.59	$0.00	$1.59	$1.59	$1.59	$0.00	$1.59	$1.59	$1.59	$0.00
Aquafina 24-pack	$4.99	$4.99	$4.99	$0.00	$4.99	$4.99	$4.99	$0.00	$4.99	$4.99	$4.99	$0.00
Polar Ginger Ale 1 L	$0.97	$0.97	$0.97	$0.00	$0.97	$0.97	$0.97	$0.00	$0.97	$0.97	$0.97	$0.00
Polar GA 12-Pack	$3.89	$3.89	$3.89	$0.00	N/A	N/A	N/A	N/A	$3.76	$3.89	$3.89	$0.40
Polar Seltzer 1 L	$0.99	$0.99	$0.99	$0.00	$0.99	$0.99	$0.99	$0.00	$0.99	$0.99	$0.99	$0.00
Polar Seltzer 12-pk	$3.49	$3.49	$3.49	$0.00	$3.49	$3.49	$3.49	$0.00	$3.49	$3.49	$3.49	$0.00
Gatorade 32 oz.	$1.00	$1.00	$1.00	$0.00	$1.00	$1.00	$1.00	$0.00	$1.00	$1.00	$1.00	$0.00
Gatorade 8-pack	$4.99	$4.99	$4.99	$0.00	$4.99	$4.99	$4.99	$0.00	$4.99	$4.99	$4.99	$0.00
Coca-Cola 2 L	$1.25	$1.25	$1.25	$0.00	$1.28	$1.29	$1.29	$0.04	$1.25	$1.25	$1.25	$0.00
Lipton Brisk 2 L	$1.25	$1.25	$1.25	$0.00	$1.29	$1.29	$1.29	$0.00	$1.25	$1.25	$1.25	$0.00
Lipton Brisk 12-pk	$2.99	$2.99	$2.99	$0.00	$2.99	$2.99	$2.99	$0.00	$2.99	$2.99	$2.99	$0.00

Survey data indicates Hannaford's beverage pricing (see Table 2) was consistent across Maine, Massachusetts and New Hampshire. For the 19 beverage products examined, pricing was identical across all but five beverages. Three non-carbonated beverages, Poland Spring 12-pack and the "sport" 12-pack, as well as the Lipton Brisk 2L bottle, were less expensive in Massachusetts than in Maine. Two carbonated beverages, the Coca-Cola 12-pack and 2L bottle, covered by the BDL in both Massachusetts and Maine, were less expensive in Massachusetts and New Hampshire than in Maine.

The survey indicates prices for carbonated beverages were the same in Massachusetts and New Hampshire, with the exception of the Coca-Cola 12-pack. The Coca-Cola 12-pack price was the same in New Hampshire as in Maine, where it carries a deposit, while it was less expensive in Massachusetts, where it also carries a deposit.

Table 3 – Stop & Shop Price Comparison

	Massachusetts				Connecticut			
Product	**Mean**	**Mode**	**Med**	**Range**	**Mean**	**Mode**	**Med**	**Range**
Coke 20 oz	$1.69	$1.69	$1.69	$0.00	$1.69	$1.69	$1.69	$0.00
Coke 12-pack	$5.29	$5.29	$5.29	$0.00	$5.49	$5.49	$5.49	$0.00
Vitamin Water 20 oz	$1.50	$1.50	$1.50	$0.00	$1.46	$1.50	$1.50	$0.11
Poland Spring 1.5L	$1.29	$1.29	$1.29	$0.00	$1.23	N/A	$1.29	$0.39
Poland Spring Sport 12-Pack	$4.99	$4.99	$4.99	$0.00	$5.32	$4.99	$4.99	$1.00
Poland Spring 24-pack	$4.99	$4.99	$4.99	$0.00	$5.66	$5.49	$5.49	$0.50
Aquafina 20 oz	$1.59	$1.59	$1.59	$0.00	$1.69	$1.69	$1.69	$0.00
Aquafina 24-pack	$4.99	$4.99	$4.99	$0.00	$5.99	$5.99	$5.99	$0.00
Polar Ginger Ale 1 L	$0.99	$0.99	$0.99	$0.00	$0.99	$0.99	$0.99	$0.00
Polar Ginger Ale 12-Pack	$4.99	$4.99	$4.99	$0.00	$4.99	$4.99	$4.99	$0.00
Polar Seltzer 1 L	$1.00	$1.00	$1.00	$0.00	$1.00	$1.00	$1.00	$0.01
Gatorade 32 oz.	$1.25	$1.25	$1.25	$0.00	$1.26	$1.25	$1.25	$0.04
Gatorade 8-pack	$6.99	$6.99	$6.99	$0.00	$6.99	$6.99	$6.99	$0.00
Coca-Cola 2 L	$1.69	$1.69	$1.69	$0.00	$1.79	$1.79	$1.79	$0.00
Lipton Brisk 2 L	$1.79	$1.79	$1.79	$0.00	$1.89	$1.89	$1.89	$0.00
Lipton Brisk 12-pack	$5.29	$5.29	$5.29	$0.00	$5.79	$5.79	$5.79	$0.00

The survey suggests Stop & Shop's beverage pricing (see Table 3) varied between Massachusetts and Connecticut. Based on the mode, seven of the 16 products, two carbonated beverages (Coca-Cola 12-pack, Coca-Cola 2L) and five types of noncarbonated beverages (Poland Spring 24-pack, 20 oz. Aquafina and Aquafina 24-pack, Lipton Brisk 2L and Lipton Brisk 12-pack) were less expensive in Massachusetts than in Connecticut. Eight beverages had identical pricing; four carbonated beverages covered by deposits in both states and four non-carbonated beverages, two of which are covered under the Connecticut BDL (Vitamin Water, Poland Spring Sport 12-pack).Data from the stores sampled implies beverages in Connecticut, regardless of type and regardless of the differences in the two states' deposit laws, were either more expensive or priced the same as in Massachusetts.

Table 4 – Big Y Price Comparison

	Massachusetts				Connecticut			
Product	**Mean**	**Mode**	**Med**	**Range**	**Mean**	**Mode**	**Med**	**Range**
Coke 20 oz	$1.69	$1.69	$1.69	$0.00	$1.69	$1.69	$1.69	$0.00
Coke 12-pack	$5.50	$5.50	$5.50	$0.00	$5.50	$5.50	$5.50	$0.00
Vitamin Water 20 oz	$1.59	$1.59	$1.59	$0.00	$1.59	$1.59	$1.59	$0.00
Poland Spring 1.5L	$1.29	$1.29	$1.29	$0.00	$1.73	$1.73	$1.73	$0.00
Poland Spring Sport 12-Pk	$5.15	$5.15	$5.15	$0.00	$6.23	$6.23	$6.23	$0.00
Poland Spring 24-pack	$5.74	N/A	$5.74	$0.50	$6.79	$6.79	$6.79	$0.00
Aquafina 20 oz	$1.59	$1.59	$1.59	$0.00	$1.69	$1.69	$1.69	$0.00
Aquafina 24-pack	$7.99	$7.99	$7.99	$0.00	$5.99	N/A	$5.99	$4.00
Polar Ginger Ale 1 L	$1.11	$1.11	$1.11	$0.00	$1.11	$1.11	$1.11	$0.00
Polar Ginger Ale 12-Pack	$4.50	$4.50	$4.50	$0.00	$4.50	$4.50	$4.50	$0.00
Polar Seltzer 1 L	$1.11	$1.11	$1.11	$0.00	$1.11	$1.11	$1.11	$0.00
Gatorade 32 oz.	$1.39	$1.39	$1.39	$0.00	$1.39	$1.39	$1.39	$0.00
Gatorade 8-pack	$7.39	$7.39	$7.39	$0.00	$7.43	$7.43	$7.43	$0.00
Coca-Cola 2 L	$1.89	$1.89	$1.89	$0.00	$1.89	$1.89	$1.89	$0.00
Lipton Brisk 2 L	$2.00	$2.00	$2.00	$0.00	$2.00	$2.00	$2.00	$0.00
Lipton Brisk 12-pack	$5.99	$5.99	$5.99	$0.00	$5.99	$5.99	$5.99	$0.00

Big Y (see Table 4) had the smallest sample size of all supermarket chains included in the survey, with four stores (two in Connecticut, two in Massachusetts) surveyed. The sample suggests Big Y beverage pricing varied somewhat between Massachusetts and Connecticut. Four types of water (Poland Spring 1.5L, Poland Spring Sport 12-pack, Poland Spring 24-pack and 20 oz. Aquafina) were less expensive in Massachusetts than in Connecticut, where they carry a deposit. Gatorade 8-packs were also less expensive in Massachusetts than in Connecticut, but Gatorade does not carry a deposit in either state. The Aquafina 24-pack was less expensive in Connecticut than in Massachusetts even though it is covered under the BDL in Connecticut. Vitamin Water 20 oz. was priced the same in Massachusetts and Connecticut even though it carries a deposit in Connecticut and not in Massachusetts.

Conclusion:

Information from the stores surveyed suggests prices are not higher because a beverage carries a deposit. Opponents of an updated BDL have stated on several occasions that prices for beverages currently not covered under the Massachusetts BDL would "rise almost 5 cents" in addition to the 5 cent deposit, if the BDL is updated.[5] If this prediction were accurate, one would expect prices for beverages covered under those states BDLs (CT and ME) to be consistently higher than in Massachusetts, where the updated BDL is not in effect on those beverages, or New Hampshire for that matter with no BDL. However, the preliminary data collected shows that water and other non-carbonated beverages were rarely more expensive in states that included them in their BDL versus Massachusetts or New Hampshire, which do

[5] This prediction appears in a letter dated December 10, 2010 to legislators drafted by a coalition of bottle bill opponents.

not. Some of the beverages surveyed were actually more expensive in Massachusetts and New Hampshire than in Maine where they are included in the BDL. The survey data indicates that some types of bottled water sold in Connecticut were less expensive in Massachusetts, but in general beverages either cost the same or are more expensive in Connecticut than in Massachusetts regardless of whether the beverage is covered under the BDL or not.

The preliminary survey data also calls into question the opponents' claim that an updated BDL will cost retailers $116 million a year. If that prediction were accurate, one would expect higher prices in Maine and Connecticut stores to be readily apparent, as a means to collect some or all of these added expenses. Yet, the survey suggests Maine's prices are the same or slightly lower than Massachusetts' prices, and Connecticut's prices are the same or slightly higher than Massachusetts'. It appears that Maine and Connecticut stores were able to accommodate BDL updates due to the presence of reverse vending machines, which can handle a large volume and array of materials in an efficient manner.. Based on our experience in Massachusetts and information gleaned from store managers and reverse vending machine providers (see section d below), we would anticipate the ability of Massachusetts stores to similarly accommodate an updated BDL.

Table 6: Aggregate Beverage Prices, By State							Low	High
State	**Product**	**Mean**	**Mode**	**Med**	**Range**	**SD**	**Conf Interval**	
MA	Coca Cola 20 oz.	$1.67	$1.59	$1.69	$0.35	$0.09	$1.58	$1.76
	Coke 12-pack	$4.83	$4.99	$5.29	$4.49	$1.23	$3.60	$6.06
	Vitamin Water 20 oz	$1.44	$1.00	$1.49	$0.99	$0.30	$1.14	$1.74
	Vitamin Water 32 oz.	$2.04	$1.55	$1.99	$1.34	$0.49	$1.55	$2.54
	Poland Spring 1.5 L	$1.49	$1.19	$1.29	$1.30	$0.37	$1.12	$1.87
	Poland Spring 12-Pk	$4.08	$3.89	$3.89	$2.10	$0.63	$3.45	$4.71
NH	Coca Cola 20 oz.	$1.60	$1.59	$1.59	$0.20	$0.05	$1.54	$1.65
	Coke 12-pack	$4.49	$4.99	$4.99	$2.16	$0.86	$3.63	$5.35
	Vitamin Water 20 oz	$1.37	$1.00	$1.29	$0.79	$0.32	$1.05	$1.69
	Vitamin Water 32 oz.	$1.95	$1.55	$1.84	$1.14	$0.41	$1.54	$2.36
	Poland Spring 1.5 L	$1.41	$1.19	$1.19	$0.70	$0.30	$1.11	$1.72
	Poland Spring 12-Pk	$4.35	$3.89	$3.89	$2.10	$0.83	$3.51	$5.18
ME	Coca Cola 20 oz.	$1.62	$1.59	$1.59	$0.20	$0.07	$1.55	$1.69
	Coke 12-pack	$4.64	$4.99	$4.99	$2.66	$0.92	$3.72	$5.56
	Vitamin Water 20 oz	$1.40	$1.00	$1.29	$0.79	$0.30	$1.10	$1.70
	Vitamin Water 32 oz.	$1.89	$1.55	$1.74	$1.14	$0.38	$1.51	$2.27
	Poland Spring 1.5 L	$1.45	$1.19	$1.19	$0.80	$0.34	$1.11	$1.79
	Poland Spring 12-Pk	$4.49	$4.19	$4.19	$1.80	$0.73	$3.76	$5.22
CT	Coca Cola 20 oz.	$1.71	$1.69	$1.69	$0.10	$0.03	$1.67	$1.74
	Coke 12-pack	$5.23	$4.59	$5.49	$1.90	$0.63	$4.60	$5.86
	Vitamin Water 20 oz	$1.54	$1.25	$1.50	$0.64	$0.24	$1.29	$1.78
	Vitamin Water 32 oz.	$2.79	$2.79	$2.79	$0.00	$0.00	$2.79	$2.79
	Poland Spring 1.5 L	$1.64	$1.99	$1.73	$0.99	$0.37	$1.26	$2.01
	Poland Spring 12-Pk	$4.94	$4.59	$4.59	$1.40	$0.70	$4.24	$5.64

b) Expanded Retail Prices

After surveying other supermarkets, drug stores, and convenience stores, beverage prices were compared across the four states observed. A summation of sample beverage pricing is listed below in Table 6.

Eighty-nine percent of beverages (16 out of 18) surveyed in other states had a price that was statistically equal to the price in Massachusetts (mean price fell within one standard deviation of the MA mean price). A 32 oz. Vitamin Water was found to be less expensive in Massachusetts, but a closer examination of the data shows the only recorded prices for 32 oz. Vitamin Water in Connecticut were at convenience stores, which the survey indicates have higher prices than supermarkets. The other beverage that fell outside the Massachusetts confidence interval was Connecticut's Poland Spring 12-pack.

The following graphs (see Charts 1 and 2) show mean prices in the four observed states for a 20 oz. Coca-Cola (ME, CT and MA deposit) and a 20 oz. Vitamin Water (CT and ME deposit only). Graphs of the other beverages surveyed are in Attachment B. The graphs of survey data show similar pricing consistency by state, regardless of whether a deposit is placed on the beverage. Connecticut has the highest mean beverage price, followed by Massachusetts and then Maine and New Hampshire, a consistent result across five of the six beverages surveyed. For nearly all beverages surveyed, Connecticut's higher prices did not display statistical significance.

The charts show mean values in the four observed states are statistically equal within one standard deviation for a 20 oz. Coca-Cola and a 20 oz. Vitamin Water. As Vitamin Water is included in the Maine BDL, opponent statements would suggest it should be priced higher. The preliminary survey data suggests this is not the case.

MassDEP also used regression analysis on the sampled beverages proposed to be added to the Massachusetts BDL (20 oz. Vitamin Water, 32 oz. Vitamin water, Poland Spring 1.5L, Poland Spring 12-Pack). The regressions looked at the relationship between beverage pricing and various factors (state, type of retailer, store chain). The beverage regression tables for each product examined are in Attachment B. Consistently, the regressions showed little to no correlation between the price of a beverage and the state in which it was sold (with BDL or without BDL). The strongest correlation in determining price was shown to be the type of retailer (supermarket, convenience store, drug store).

Chart 1: Mean Price, 20 oz. Coca-Cola

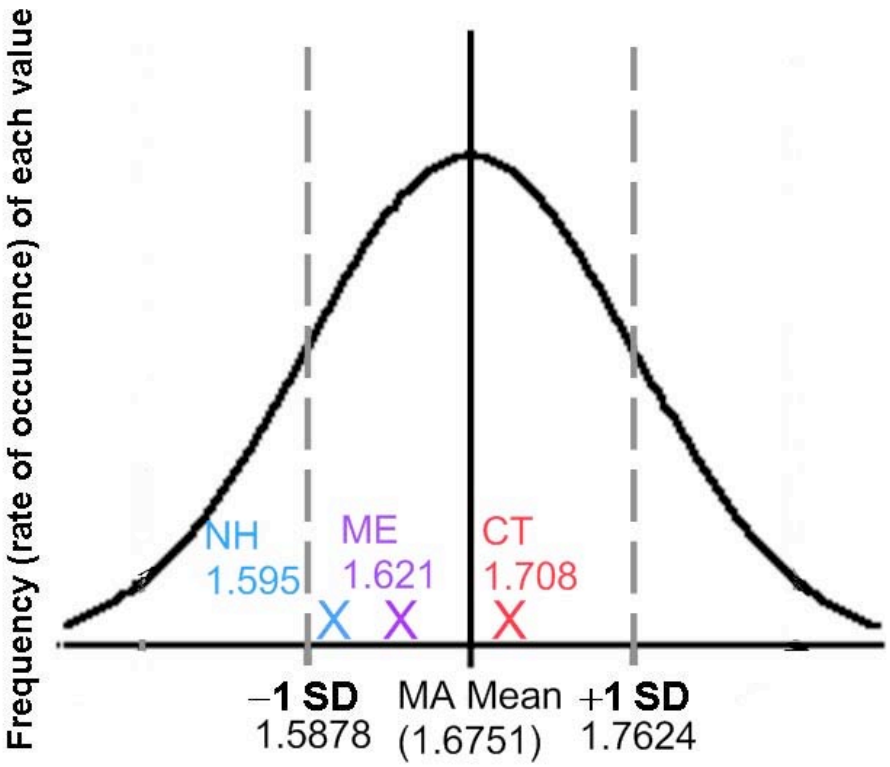
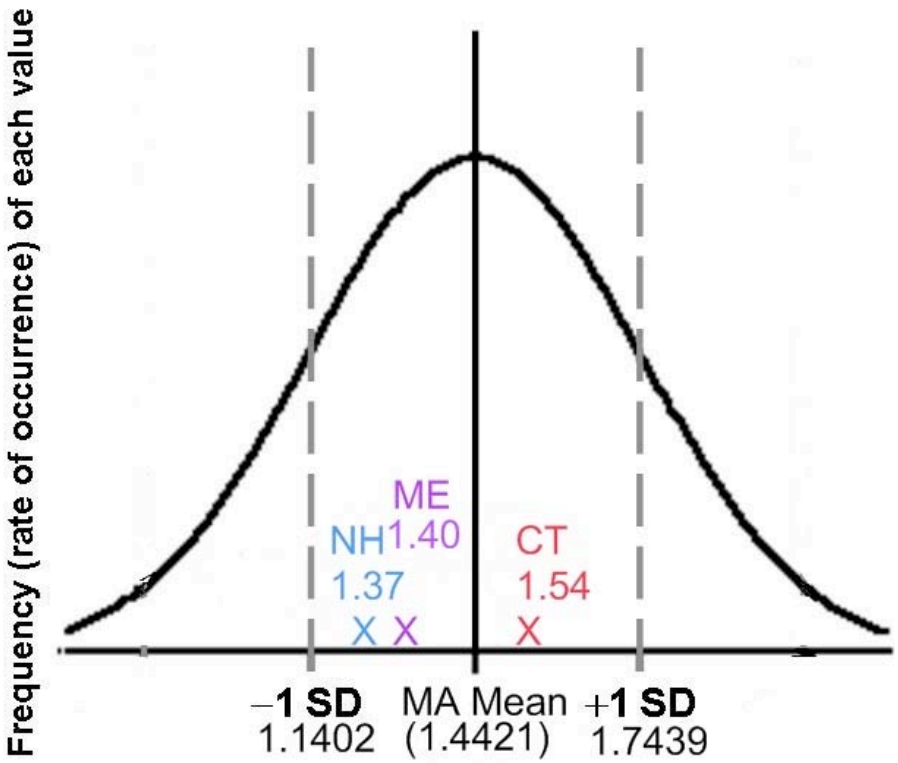


Chart 2: Mean Price, 20 oz. Vitamin Water



Conclusion:

The regressions show that price variations within the sample data most closely correlate with the individual retail chain in which the beverage is sold. The data also demonstrated the type of retailer (supermarket, convenience store, drug store) appears to be a factor in determining beverage price. The weakest correlation factor was the state in which the beverage was sold. In most cases, adding state variables to the regressions made them less accurate (as measured by the r-squared statistic). As state variables had a weak correlation, it suggests a BDL has little if anything to do with beverage price when compared to other factors. MassDEP's preliminary survey was unable to locate evidence to suggest beverage pricing is influenced by whether the beverage has a deposit or not in a particular state.

c) Consumer Choices

Opponents of an updated BDL have claimed that the updated law will reduce consumer choice of beverages. To assess this prediction, MassDEP compared beverage options in Massachusetts versus Maine and Connecticut. In selecting stores, MassDEP used the same parameters used in surveying supermarket prices. This was limited to six beverage categories (single serve water, multi-pack water, enhanced water, single serve sports drinks/new age beverages, multi-pack sports drinks/new age beverages and 100% kids juice) available at Hannaford supermarkets (five in ME and five in MA), which carry a deposit in Maine but not Massachusetts, and three types of water beverages (single serve water,

multi-pack water, and enhanced/flavored water) at Stop & Shop supermarkets (five CT and four in MA) that carry a deposit in Connecticut but not Massachusetts. Hannaford's and Stop & Shop were chosen because they provide beverage specific availability information for individual stores online. The average numbers of beverages available in each category in each state are listed below.

Table 7: Beverage Choices, Massachusetts and Maine Hannaford locations

Hannaford Comparison	Single Serve		Multi-Pack			
	Water	Sports Drinks	Water	Sports Drinks	Kids' 100% Juice	Enhanced Water
Massachusetts Stores (5) Avg.	10.4	59	33.4	57.4	17	87
Maine Stores (5) Avg.	10.6	67.6	37	62.2	17.2	86.4

Table 8: Beverage Choices, Connecticut and Massachusetts Stop & Shop locations

Stop & Shop Comparison	Water Products		
	Single Serve	Multi-Pack	Enhanced/Flavored
Connecticut Store (5) Avg.	13	30	34
Massachusetts Store (4) Avg.	13	30	34

The survey indicates Hannaford Stores in Maine have more beverage choices on average than their stores in Massachusetts, despite that these beverages are covered by the Maine BDL. These beverage categories were examined for Maine because they are currently included in the Maine BDL and under consideration for inclusion in Massachusetts. Stop & Shop stores surveyed in Massachusetts and Connecticut, though its Pea-pod service, had on average the same number of beverage choices across the three categories examined. These beverage categories were examined for Connecticut because they are covered in Connecticut's updated BDL and considered for inclusion in the Massachusetts update. Stores surveyed and individual store totals are included in Attachment C.

In addition, opponents have stated that retailers would reduce the range of beverages they would offer to consumers because their reverse vending machines would be unable to handle certain beverages, rendering those beverages inconvenient and expensive to redeem. MassDEP interviewed RVM manufacturers about the capabilities of their technology to read and process containers that may be considered in an update, under the assumption that containers that could not be read and processed by the RVM would increase the operational costs of the retailer and lead them to reduce the number of these beverages available in their stores. RVM manufacturers interviewed stated that existing RVMs can read and process over 90% percent of beverage containers included in the proposed updated Massachusetts BDL. If container size is set at less than 3 liters and only water and flavored water were added (as in the CT BDL), nearly 100% of containers can be redeemed. As RVMs can handle the new material from a processing and capacity (see RVM interviews below) perspective, there is little reason to believe consumer beverage choices would be limited as a result of updating the BDL because current retailer redemption practices would not need to change.

Conclusion:

In combination, the survey information was unable to support opponents' claims that an updated BDL would reduce consumer beverage choices. It does not appear to have had that effect in other states that have updated their BDLs and the infrastructure to process these beverages exists today and has sufficient capacity.

d) **Interviews**

Massachusetts Interviews

During in-store visits and through follow-up phone conversations, MassDEP staff spoke with Massachusetts supermarket store managers about the operational and customer service aspects of bottle redemption in their specific stores. The managers expressed satisfaction with the operation of in-store reverse vending machines (RVMs). Managers interviewed noted that their RVMs handle between 4,000 and 6,000 containers per week, equaling $200-$300 worth of redemptions. Typical RVMs have a processing capacity of over 12,000 units per day. [6] This translates to an average RVM utilization of less than 10% under the current BDL. Even with an updated BDL in Massachusetts, which could double the redemptions at supermarkets, no additional RVMs would be necessary given existing utilization rates. None of the managers felt that servicing the RVMs was a particularly time-consuming process. It was estimated to take between five and ten minutes to empty an RVM when full. This task only needed to be completed every other day during the week, and several times per day on busier weekends. None of the managers had any complaints about third party service providers and reported that maintenance and pickups are timely and well managed.

The managers cited only minor operational concerns for RVMs mostly that the machines sometimes get dirty and are best located away from checkout areas due to potential noise. None of the managers expressed strongly that these issues were of major concern, especially given that customers appeared to be quite satisfied with the RVM redemption process. One manager mentioned that his store took glass redemptions at the service counter, which was not a problem because of the relatively small volume of glass beverage containers sold at the supermarket.

Connecticut and New York Interviews

Interviews with store managers in Connecticut and New York yielded opinions that varied with the nuances of the BDLs in each state. In Connecticut, a manager noted redemption at twice the number of containers as before the 2009 BDL update, which meant more staff time devoted to servicing RVMs and taking some returns at the counter. However, the manager did not note any beverage containers as being a problem for acceptance by the RVM, only that customers often tried to redeem beverage containers not sold at that store. He also stated that their third-party service provider was very responsive in updating bar codes to read beverage containers. Connecticut's redemption system is almost entirely done through retailers, there are few if any redemption centers, and supermarkets also sell beer unlike most Massachusetts supermarkets. These factors significantly increase the redemption at supermarkets, which would not be the case in Massachusetts given that few supermarkets sell beer and independent redemption centers are an integral part of the redemption system in Massachusetts.

New York store managers use RVMs and are pleased with service providers' prompt response to inquiries on new products and service requests. Two of the managers noted that the BDL had been in place for such a long time, both staff and customers were well accustomed to the process. While they indicated a higher volume of returns than Massachusetts stores, staff time for redemption-related services was generally less

[6] Envipco and Tomra RVM specification sheets and interviews with companies

than an hour per day. Similar trends were noted as in Massachusetts, such as more volume on weekends, and the managers generally felt customers were satisfied with the process, as the only items redeemed at the counter were private label brands or for the occasional customer who had difficulty using the machine. Managers cited 6-8 machines per store, likely mandated by the New York BDL, which requires a specific number of RVMs per square foot. This, again, is not the case in Massachusetts.

Interviews with RVM Manufacturers

Phone interviews were conducted with the two primary reverse vending machine manufacturers and service providers (Envipco and Tomra) and additional follow-up data was obtained. RVM Manufacturers stated that today's RVMs are capable of processing nearly all beverage containers less than three liters. Issues are limited to an extremely small number of products, such as the Poland Spring 3 liter bottle (shape), and the occasional rejection of smaller containers that may rattle around, like miniature water/soda containers. This has been the experience in Connecticut (3 liters or less) and New York (less than 1 gallon) which both focused their updates on water only.

Maine's BDL includes juice containers, liquor and wine bottles (4 liters of less), which are more prevalent in a variety of shapes and sizes, but RVM manufacturers stated that RVMs are still capable of handling over 85% of the containers covered under the Maine BDL.

RVM technology is capable of processing significant quantities of containers (10,000+ per day) and most installations are utilizing only a fraction of this capacity. Estimates from individual supermarkets and supermarket per store return averages, are consistently below 1,000 containers per RVM per day, which translates to less than 10% utilization.

Conclusion:

Opponents of the updated BDL have stated that an update would result in the need for an expanded infrastructure to handle the new beverages and that a substantial portion of these updated beverages would need to be handled manually because RVMs are not capable of accepting them. MassDEP's preliminary survey indicated that the existing infrastructure to provide redemption services to customers through RVMs is more than sufficient to accommodate the expected increases from any updated BDL. CT and NY reported very few requests for additional RVMs by retailers upon updating to water, unless mandated by law, which happened in some cases in NY. The existing processing capacity of RVMs appears to be significantly underutilized across New England. RVM technology is capable of accepting a significant number, if not all, of the proposed updated BDL containers in Massachusetts, particularly when certain parameters are placed on the updated BDL (size of container, type of beverage). Any impact or inconvenience of an updated BDL on retailers and customers can be minimized by specifying in the update beverages which are most easily accommodated by RVMs, less than 3 liters, and no juice. These parameters alone would still capture the vast majority (85%) of non-carbonated beverages sold in Massachusetts, which are not currently covered under the BDL.[7]

[7] "2007 Beverage Market Data Analysis." Container Recycling Institute.