

### UNRETURNED BEVERAGE CONTAINERS AND UNCLAIMED DEPOSITS

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Refundable deposits are required on almost all beverage containers sold in Michigan. Bottle and can deposits are usually five or ten cents, but may exceed ten cents if the industry initiating the deposit chooses. Although bottle and can deposits are mandatory for most beverage containers, consumers are not required to return beverage containers and collect their deposit. This is the point in the return chain that beverage container deposit legislation fails to address. Unreturned beverage containers and their unclaimed deposits are a weak spot in Michigan's "Bottle Bill" cycle and merit serious evaluation in terms of costs and benefits to Michigan's industries and residents.

#### The Bottle Bill

Michigan's Bottle Bill (M.C.L. 455.571-.576) was adopted by initiative in November 1976 and became effective little more than two years later. The Bottle Bill's primary purpose was to increase the use of returnable beverage containers and thereby reduce litter and solid waste caused by "one-way" containers. Specifically, the Bottle Bill stipulates that all carbonated beverage containers (including alcoholic beverages, but excluding beverages containing wine) have a deposit of at least ten cents, that certain "uniform" beverage containers need only have a five-cent deposit, and that retailers and distributors accept returned beverage containers and refund deposits.

During the 1970's debate over the Bottle Bill, proponents emphasized its potentially positive effects such as reduced beverage container litter and disposal costs, the preservation of Michigan's natural resources, and energy savings. The beverage container manufacturing industry and other industries, including packagers, brewers, and bottlers, opposed the bill on the grounds that it would be discriminatory to ban only one-way beverage containers and that the bill would result in decreased employment and state tax revenues, increased beverage prices, and a low container return rate. Opponents also suggested that a resource recovery program would be a less restrictive and more efficient approach than a source reduction program. A resource recovery program concentrates on reducing litter and solid waste by intensifying clean-up efforts; a source reduction program attempts to reduce litter and solid waste by requiring container deposits and, thereby, directly increasing consumer costs of littering. Opponents of the Bottle Bill advocated a resource recovery program since they claimed it would leave consumer choice undistorted while it accomplished reductions in solid waste, energy consumption, unemployment, and roadside litter.

This December will mark the eighth anniversary of Michigan's Bottle Bill. Preliminary data indicate the bill's success. By 1979, roadside beverage

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container litter had decreased by 84 percent.<sup>1</sup> One year later, the number of roadside beer and soft drink cans had decreased by 97 percent and roadside beer and soft drink bottles had decreased by 93 percent from pre-Bottle Bill levels.<sup>2</sup> Michigan also experienced a reduction of at least 6 percent in solid waste stream volume.<sup>3</sup> In addition,<sup>4</sup> beverage industry employment increased by an estimated 4,500 to 4,888 jobs.<sup>4</sup> (It is likely that energy savings also occurred although direct measurement was not conducted.)<sup>5</sup> In more recent years, the Bottle Bill's positive results have duplicated or surpassed these initial benefits.

A negative aspect of the Bottle Bill was the rise in beverage prices shortly after the bill became law. One study estimates Michigan consumers paid \$54-74 million more for beer in the years following Bottle Bill enactment.<sup>6</sup> Whether this reflected true cost increases or merely inflated prices is not known. However, as former state Transportation Commission Chairman Peter Fletcher stated when testifying before Congress, Michigan citizens "have decided that the conservation of energy and natural resources and a safe, clean environment and landscape are worth the price increase."<sup>7</sup> In fact, Michigan consumers are so pleased with the Bottle Bill's effects that experts estimate it would win by even a greater margin if placed on the ballot today.<sup>8</sup>

Only nine states currently have source reduction (bottle bill) programs, whereas many states have resource recovery programs. States implementing source reduction techniques, such as Connecticut, New York, and Vermont, generally indicate results similar to Michigan's; namely, a reduction in solid waste, litter, and energy and natural resource consumption, as well as a negligible employment change and an increase in beverage prices.

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<sup>1</sup>M.L. O'Toole, Michigan Roadside Litter Composition Study (Lansing: Michigan Department of Transportation, 1979), p.15.

<sup>2</sup>Peter B. Fletcher, Hearing Before the Committee on Commerce, Science and Transportation, United States Senate (Washington, D.C.: Government Printing Office, 1981), p. 28.

<sup>3</sup>Ibid.

<sup>4</sup>Senator Stephen V. Monsma, Chairman, Michigan's Deposit Law: Second Year (Lansing: Joint Committee to Study the Impact of the Beverage Container Deposit Law, 1980), pp. 18-19.

<sup>5</sup>Ibid., p. 17.

<sup>6</sup>Richard Sjolander and Peter Kakela, Effects of Michigan's Mandatory Beverage Container Deposit Law (East Lansing: Michigan State University, 1984), p. 87.

<sup>7</sup>Fletcher, Hearing, p. 27.

<sup>8</sup>Monsma, Michigan's Deposit Law, p. 10.

<sup>9</sup>John W. Anderson, Hearing Before the Committee on Commerce, Science and  
(Footnote Continued)

## Unreturned Beverage Containers

Quite clearly, the success of Michigan's Bottle Bill hinges upon the percentage of beverage containers that are returned. Experts estimate Michigan's return rate to be close to 93 percent.<sup>10</sup> Nevertheless, every returnable bottle or can not returned affects Michigan's solid waste disposal costs, environment, beverage industries, employment level, energy consumption, and deposit revenues. Therefore, to evaluate the effects of unreturned beverage containers, each of these economic sectors must be analyzed under both the current container return rate and a complete container return rate (100 percent).<sup>11</sup>

### Solid Waste<sup>12</sup>

Approximately 4.1 billion bottles and cans of soft drink are sold annually in Michigan. Of these containers, almost all are returnable. If one applies the current 93 percent return rate to these 4.1 billion containers, that leaves 7 percent, or 287 million containers, unreturned. Assuming an average weight per returnable container of 5.28 ozs.,<sup>13</sup> these 287 million unreturned containers weigh approximately 47,355 tons. At an average disposal rate of \$35 per ton, the total cost of disposing of unreturned soft drink containers is \$1,657,425 annually.

Similarly, in the Michigan beer industry, nearly all of the 2.1 billion beverage containers sold in 1985 were returnable. Once again applying a 7 percent unreturned rate, 147 million bottles and cans go into the solid waste stream. Assuming an average weight per container of 3.4 ozs.,<sup>14</sup> the unreturned beer containers constitute 15,618 tons of solid waste. At \$35 per ton, the total disposal cost attributable to unreturned beer containers is

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(Footnote Continued)

Transportation, United States Senate (Washington, D.C.: Government Printing Office, 1981), pp. 30-33; and Vermont Agency of Environmental Conservation.

<sup>10</sup> Estimate based upon Sjolander and Kakela, Michigan's Mandatory Beverage Container Law, p. 62; Daniel Webber, Unclaimed Bottle Deposits: A Summary (Lansing: Public Sector Consultants, Inc., 1985), p. 1; and Richard C. Porter, "Michigan's Experience with Mandatory Deposits on Beverage Containers" Land Economics 59 (May 1983):177.

<sup>11</sup> The author is indebted to Mr. Gandy Rao for the systems approach taken in this paper.

<sup>12</sup> Sources for this section include spokespersons for the Coca-Cola Company, Seven-Up Company, disposal companies in the Lansing vicinity, Nielson Polls, Michigan Department of Natural Resources, Gandy B. Rao, Economic Analysis of Energy and Employment Effects of Deposit Regulation on Non-Returnable Beverage Containers in Michigan (Lansing: Michigan Public Service Commission, 1975), pp. 17-18, 137, and Sjolander and Kakela, Michigan's Mandatory Beverage Container Deposit Law.

<sup>13</sup> Estimate based on Rao, Economic Analysis, p. 17 and information from beverage industry spokespersons.

<sup>14</sup> Ibid.

\$546,630. Combining the soft drink and beer industry costs gives a total solid waste disposal cost for unreturned containers of \$2,204,055. The Michigan Department of Natural Resources also has studied Bottle Bill solid waste reduction, and using its data one<sup>15</sup> obtains a \$1.2 million solid waste disposal cost for unreturned containers.

Another solid waste factor to consider is the percentage of improperly disposed of containers along Michigan roadways. At the current 93 percent return rate, clean-up costs for improperly disposed of containers amount to very little. The 95 percent reduction in roadside beverage container litter in the years following enactment of the Bottle Bill means a very small percentage<sup>16</sup> of today's roadside litter is likely composed of beverage containers. Of these, returnable bottles and cans constitute an even smaller fraction. Thus, the number of returnable containers still being littered along Michigan roadways is likely negligible. Furthermore, since passage of the Bottle Bill, many private parties have begun collecting roadside beverage containers. These private collection efforts cost the State nothing and further reduce roadside beverage container litter. A final effect of this container litter on Michigan's environment is the social cost that must be evaluated by each individual and cannot be assigned a monetary value.

### Beverage Industry

In 1975, the Michigan Public Service Commission predicted a total operating income decrease of \$8.7 million for Michigan's beverage industries under the Bottle Bill system. The breakdown of this operating income change appears in Table A, which was calculated using an 80 percent return rate, a rate 13 percent below the actual Michigan return rate. By updating these figures for inflation and adjusting for the higher 93 and 100 percent return rates, one arrives at the 1986 projections shown in Table B. As Table B indicates, Michigan beverage industries would experience a net loss in operating income of \$1.5 million if the unreturned 7 percent of beverage containers were returned. Soft drink bottlers would experience a large operating income increase if all containers with deposits were returned, primarily due to the savings from reduced glass consumption.

Tables A and B both indicate that Michigan brewers experience a much smaller rise in operating income than do soft drink bottlers. This is because brewers experience less of a reduction in glass costs since a higher percentage of their beverages are packaged in cans. In contrast to these industries, retailers experience a large income loss with a higher return rate because of increased storage and capital investment costs. For some large retailers, however, economies of scale may exist for these costs, and therefore, the retailers' income loss shown in Table B may be slightly overstated. For example, if 30 percent economies of scale exist for 10 percent of the industry, then the reduction in operating income for all beverage industries if the return rate went from 93 percent to 100 percent

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<sup>15</sup> Michigan Department of Natural Resources, Effects of Michigan's Bottle Bill on Municipal Solid Waste (Lansing: Michigan Department of Natural Resources, 1980) pp. 1-2.

<sup>16</sup> O'Toole, Michigan Roadside Litter, p. 15.

TABLE A

ESTIMATED CHANGES IN OPERATING INCOME  
DUE TO THE BOTTLE BILL, 1974

<u>Beverage Industry Sector</u>	<u>Change in Operating Income</u>
Michigan Glass Bottle Manufacturers	\$-1,373,760
Michigan Can Manufacturers	*
Michigan Brewers	747,000
Independent Beer Distributors in Michigan	-3,102,583
Soft Drink Bottlers in Michigan	12,905,770
Retailers in Michigan	-17,837,408
TOTAL CHANGE FOR ALL INDUSTRIES	\$-8,660,981

SOURCE: Michigan Public Service Commission.

\*No change in can production.

TABLE B

ESTIMATED CHANGES IN OPERATING INCOME  
DUE TO THE BOTTLE BILL, 1986

<u>Beverage Industry Sector</u>	<u>93% Return Rate</u>	<u>100% Return Rate</u>	<u>Difference Between 100% and 93% Return Rate</u>
Michigan Glass Bottle Manufacturers	\$ -3,365,025	\$ -3,657,783	\$ -292,758
Michigan Can Manufacturers	*	*	*
Michigan Brewers	1,829,815	1,989,009	159,194
Independent Beer Distributors in Michigan	-7,580,480	-8,228,788	-648,308
Soft Drink Bottlers in Michigan	31,996,018	35,002,008	3,005,990
Retailers in Michigan	-43,660,900	-47,440,913	-3,780,013
TOTAL CHANGE FOR ALL INDUSTRIES	\$-20,780,572	\$-22,336,467	\$-1,555,895

SOURCE: Michigan Public Service Commission. Calculations by Public Sector Consultants, Inc.

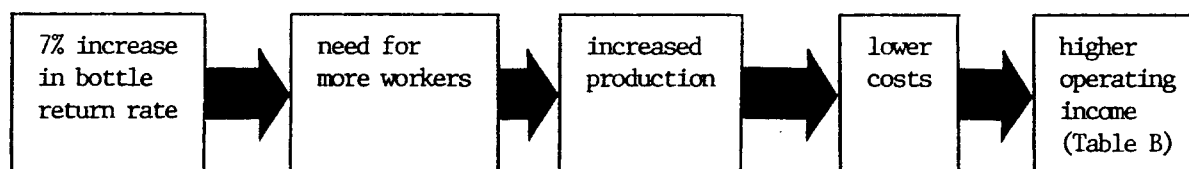
\*No change in can production.

would be \$1,442,495; only a \$113,400 difference from the amount shown in Table B.

### Employment

As the return rate for beverage containers changes, so does the number of jobs directly and indirectly associated with Michigan's beverage industries. If the container return rate were to rise, one probable effect would be the need for more brewery workers to wash, stock, refill, and ship the additional returned bottles. Likewise in the soft drink industry, a higher return rate would mean more workers needed to perform similar tasks. However, beverage retailers would likely experience negligible employment effects, particularly since it only takes about two and one-half hours to process 1,000 additional returned bottles.<sup>17</sup>

Table C shows an estimated 225 jobs lost in the metal can, glass bottle, litter collection, and related industries due to the Bottle Bill. Approximately 60 percent of these jobs are in the metal can industry; only 27 percent are in the glass container industry. This type of result is expected when one considers that a portion of the jobs lost in one-way glass production will be made up by an increase in jobs associated with returnable bottle production. As Table C illustrates, the soft drink and brewing industries could expect employment increases if the return rate were to move from 93 percent to 100 percent. This effect may be clarified by the following diagram.



A final point concerning estimated net job creation is the effect higher employment will have on consumption. Increased employment leads to increased consumption, thereby creating a higher demand for beverages and the need for more workers<sup>18</sup> once again. Estimates for this consumption multiplier effect range from 0<sup>18</sup> to 231<sup>19</sup> additional jobs being created, but the actual number of new jobs probably falls between these two figures. Because of the divergence of opinion and difficulty in estimation, Table C does not include the consumption effects and, subsequently, the estimate of 968 new jobs created may be slightly understated.

<sup>17</sup> Rao, Economic Analysis, p. 154.

<sup>18</sup> Estimate based on Monsma, Michigan's Deposit Law, pp. 18-19.

<sup>19</sup> Estimate based on Rao, Economic Analysis, pp. 189-193.

TABLE C  
 ESTIMATED CHANGES IN MICHIGAN EMPLOYMENT  
 DUE TO THE BOTTLE BILL, 1986

<u>Beverage Industry Sector</u>	<u>93% Return Rate</u>	<u>100% Return Rate</u>	<u>Net Change</u>
Metal Can Manufacturers	-370	-503	-133
Glass Container Manufacturers	-167	-227	-60
Litter Collection and Waste Disposal	-785	-785	--
Indirect Effects from Metal Cans	-907	-925	-18
Indirect Effects from Glass Containers	-26	-40	-14
TOTAL DECREASE	-2,255	-2,480	-225
Retail Trade	2,946	2,946	--
Malt Beverage Manufacturers <sup>1</sup>	1,334	1,809	475
Soft Drink Manufacturers	2,149	2,867	718
TOTAL INCREASE	6,429	7,622	1,193
NET CHANGE	4,174	5,142	968

SOURCE: Michigan Public Service Commission. Calculations by Public Sector Consultants, Inc.

<sup>1</sup>Including 10% industrywide economies of scale.

## Energy

According to Department of Natural Resources estimates, Michigan recycles approximately 90 percent of its cans and 50-70 percent of its bottles. Using these figures as rough estimates, it may be assumed that a 70 percent average recycling effort takes place on a statewide basis for both types of containers. The energy savings shown in Table D were computed by combining this 70 percent recycling rate with Michigan's energy consumption for 1984 of 2,523.8 trillion BTUs. As Table D indicates, Michigan saved an estimated 8.1 trillion BTUs in 1984 as a result of the Bottle Bill. However, if all returnable containers had been returned, Michigan could have saved 8.5 trillion BTUs in that same year, an increase of 400 billion BTUs. The 8.5 trillion BTUs would have been about 63.5 percent of all energy used by bottling and related industries in 1984. A resource recovery program would have saved these industries 3.7 times as much energy as the estimated Bottle Bill energy savings. Although the 400 billion BTUs potentially saved in 1984 would have been only .01 percent of Michigan's total energy consumption for that year, this figure is still equivalent to 3.2 million gallons of gasoline, a significant amount of energy in absolute terms.

## Deposits

The unclaimed deposits on unreturned beverage containers directly affect both beverage consumers and bottlers. Consumers experience monetary losses equal to the sum of deposits paid on all unreturned returnable beverage containers. Assuming 434 million unreturned bottles and cans annually and an average deposit of 11.2 cents<sup>20</sup> per container, this uncollected consumer loss is \$48.6<sup>21</sup> million. Most experts agree that this consumer loss is between \$20 million<sup>21</sup> and \$52 million.<sup>22</sup> Industry officials and organizations such as the Michigan Soft Drink Association generally do not put a dollar estimate on this loss, but unanimously agree that it is small or negligible.<sup>23</sup>

As expected, one group's loss is another group's gain. Deposits not claimed by consumers fall to those who initiated the deposits. In the beer industry this economic agent is sometimes the brewer but usually the beer distributor, and in the soft drink industry it is the bottler. Figure 1 illustrates the market position of these three industries with respect to other beverage industries. These deposit-initiating firms experience windfall profits equal to the aforementioned consumer loss since retailers only pass deposits back and forth without realizing any profit. Under Michigan law, the distributors, brewers, and bottlers are not required to keep records or report the profits they make from unclaimed deposits. Industry spokespersons hasten to point out a number of facts when confronted with this issue. First, these industries emphasize that profits from unclaimed deposits are taxed just as

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<sup>20</sup> Estimate based on data from beverage container return centers.

<sup>21</sup> Fletcher, Hearing, p. 28.

<sup>22</sup> Estimate based on U.S. General Accounting Office and U.S. Department of Commerce data.

<sup>23</sup> Sources include the Michigan Soft Drink Association, Coca-Cola Company, and various beer distributors in the Lansing area.



TABLE D

ESTIMATED MICHIGAN ENERGY SAVINGS UNDER VARIOUS RETURN  
RATES AND RECYCLING PROGRAMS, 1984

<u>Recycling Program</u>	93%		100%		Net Change	
	<u>Return Rate (trillion BTUs)</u>	<u>Percentage</u> <sup>1</sup>	<u>Return Rate (trillion BTUs)</u>	<u>Percentage</u> <sup>1</sup>	<u>(trillion BTUs)</u>	<u>Percentage</u> <sup>1</sup>
Resource Recovery	27.4	204.8%	28.9	216.1%	1.5	11.2%
Source Reduction <sup>2</sup>	8.1	60.6	8.5	63.5	.4	3.0
Net Change	19.3		20.4		1.1	

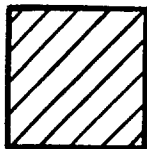
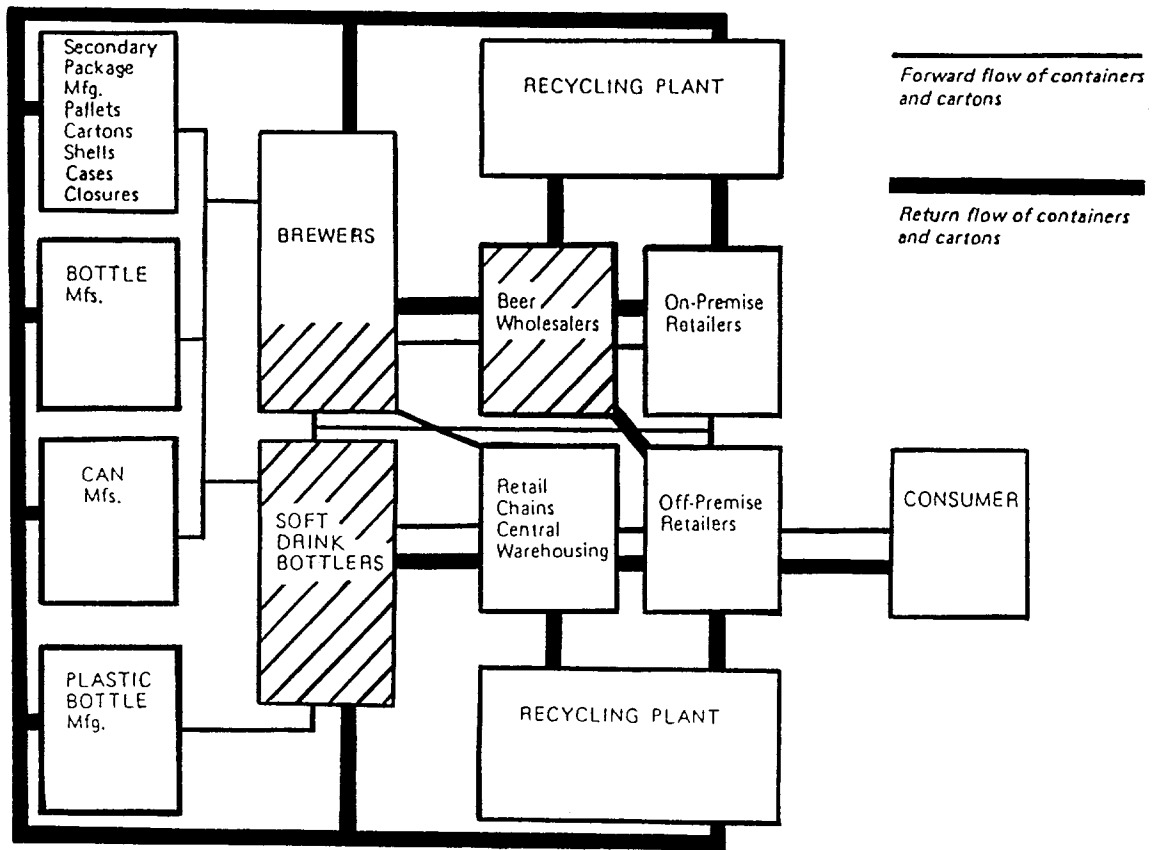
SOURCES: Michigan Department of Natural Resources, Michigan Public Service Commission, and United States Department of Energy.  
Calculations by Public Sector Consultants, Inc.

<sup>1</sup>Beverage industry energy savings as a percentage of 1975 beverage industry energy consumption.

<sup>2</sup>Bottle Bill legislation.

Figure 1

# Material and Package Flows



Percentage of industry initiating deposits (based upon market share).

SOURCE: Michigan Joint Committee to Study the Impact of the Beverage Container Deposit Law.

other industry income is taxed. Second, they consider these profits compensation for capital expenditures needed to install refilling and bottle sanitizing machines. Finally, they claim that Michigan's container return rate in the long run is very close to 100 percent and, therefore, the industry has to pay back all deposit money when consumers eventually return stored or littered beverage containers.

These industry arguments have some validity; nevertheless, they neglect some important aspects of deposit legislation. While it is true that these windfall profits are taxed, taxation is not the issue. The issue is whether or not these industries are entitled to the profits. Moreover, while capital costs of complying with Bottle Bill legislation are substantial, evidence suggests that for two of the three industries benefiting from unclaimed deposits these additional costs are adequately covered by savings from refilling (tables A and B). Third, if it is true that the real return rate across many years approaches 100 percent, these industries can still invest the profits and earn interest revenue until deposits are claimed. With an estimated \$48.6 million in unclaimed deposits annually, a market interest rate of 6.1 percent, and 80 percent of unclaimed deposits being predictable to invest for one year, these three industries could earn \$2.4 million in interest revenue even if the long-run return rate were 100 percent. Obviously, the more predictable the annual return rate is, the greater the companies' chances of securing higher long-term interest rates will be, and, consequently, the higher their post-investment profits.

The Michigan United Conservation Clubs supported legislation in 1979 to require these industries to report annually the profits attributable to unclaimed deposits. Included in the bill was the stipulation that these profits were to be turned over to the state conservation and recreation fund.<sup>24</sup> The legislation was not enacted. If similar legislation is eventually enacted, another possible method of dispersing these profits would be to allocate them to the state's retailers,<sup>25</sup> a solution that would help ease their sizeable financial burdens resulting from Bottle Bill compliance (see Table B).

#### Wine Cooler Deposits

Senate Bill 761 was introduced at the request of the Michigan United Conservation Clubs in April 1986 to amend the Bottle Bill to place mandatory deposits on wine coolers. The bill, which passed the Senate on July 1, by a 32-2 margin, requires deposits on containers with mixtures of wine and nonalcoholic beverages (wine coolers) or of spirits and nonalcoholic beverages, covers any size container and any proof liquor, and places the question on the November 4, 1986 ballot. If approved by the House of Representatives, and voters on November 4, the "wine cooler amendment" will become effective two years later; however, in recent weeks the likelihood of legislative approval has decreased.

The effects of this type of legislation will likely be similar to those of the Bottle Bill. However, because a large percentage of beverages covered

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<sup>24</sup>Webber, Unclaimed Bottle Deposits, p. 2.

<sup>25</sup>Fletcher, Hearing, p. 28.

by S.B. 761 are produced out of state (mainly in California), it is likely that the employment and energy effects will be less dramatic than those due to the Bottle Bill. Other probable results of S.B. 761, such as consumer loss, windfall deposit profits, solid waste reduction, and most beverage industries costs, would likely be smaller but proportional to changes due to the current deposit law. Furthermore, with Michigan wine cooler sales expected to increase by 25 percent in 1986,<sup>26</sup> the problems associated with disposal of these containers will only grow.

### Conclusion

Unreturned beverage containers and their associated unclaimed deposits have a profound effect upon Michigan's environment, consumers, beverage industries, and energy consumption. If the current return rate of 93 percent could be increased to almost 100 percent, Michigan could save an additional \$2,304,055 in solid waste clean-up costs, create 968 new jobs, save 400 billion BTUs of energy, reduce beverage container litter even further, and save consumers \$48.6 million in unclaimed deposits, all in one year. In addition, by achieving a container return rate closer to 100 percent, bottlers' windfall profits would be reduced proportionately.

Mandatory deposits should be required on wine coolers and similar beverages in Michigan since the state will experience a net gain in many sectors of its economy. Prompt action is necessary in the current bottle deposit debate since sales of these beverages are expected to rise dramatically in the near future.

### Recommendations

1. An in-depth study should be undertaken to analyze the effects of Michigan's Bottle Bill. If the results confirm preliminary study results, not only would further analysis encourage more conservation and recycling efforts within Michigan, but it would also help states considering source reduction programs estimate the possible gains and losses from implementation.
2. Michigan bottlers, distributors, and brewers should be required to report to the state the amount of profits from unclaimed deposits, which would allow measurement of these revenues.
3. Revenues from unclaimed deposits should be allocated to solid waste management, environmental improvement, and/or educational programs.
4. S.B. 761 or similar legislation should receive legislative and public approval. Although the benefits of this legislation would not be as great as those due to the current Bottle Bill, the net results would benefit Michigan's environment, lower solid waste disposal costs and energy consumption, and perhaps increase employment.

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<sup>26</sup>"Cooler Sales Soaring; Stores Expect Banner Year in 1986," Michigan Beverage News, June 16, 1986, p. 32.

5. The Michigan Liquor Control Commission should be given the authority to require deposits on new beverage containers. Such authority would eliminate the need for a vote in favor of such a measure by three-fourths of the legislature or a referendum each time a new consumer beverage is developed.
6. Information should be provided to the Michigan public on the additional benefits that would result from the return of currently unreturned beverage containers.