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March 29, 2013

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Dear Ms. Oakleaf:

Thank you for the opportunity to comment on your Agency's report, *Comparison of System Costs and Materials Recovery Rates: Implementation of Universal Single Stream Recycling With and Without Beverage Container Deposits*, March 4, 2013.

The Container Recycling Institute commends the Agency for setting ambitious goals in the implementation of Act 148. We know that this draft report is just the first step in many analyses and studies to come. It is for that reason that we feel it is important to address discrepancies and inaccuracies early on in the process so that future research can benefit.

We appreciate the opportunity to submit comments regarding this report. Please contact me with any questions you may have.

Sincerely,

Susan V. Collins
President

## Amended Comments on Draft Report to Vermont ANR – April 5, 2013

*Comparison of System Costs and Materials Recovery Rates: Implementation of Universal Single Stream Recycling With and Without Beverage Container Deposits*

**Submitted by Susan V. Collins**
**Container Recycling Institute**

**Container Counts and Impacts on Unclaimed Deposits and Recycling Rate**

Regarding Table 1., "Sales of Vermont Deposit Beverage Containers, 2011," it appears that the number of containers sold in Vermont is underestimated by 18% for the existing deposit law, and should be 31% higher for the combined existing/expanded law.

The CRI 2006 and 2010 estimates of containers sold are both higher than what is reported for 2011 by DSM/Northbridge. The CRI 2010 estimates of container counts are higher than the DSM unit counts. We will send unit counts under separate cover.

Existing deposit law beverage sales:
DSM's report for the State of Vermont reports 2004 container sales count of 270,468,691, and the 2011 estimate reports 274,127,942 containers sold, which is a 1.4% increase over this 7-year period. In this same time period, the DSM 2004 estimate of returns was 228,776,323 units, and the 2011 estimate of returned units was 244,809,241, which represents a 7% increase in number of units returned. In DSM's 2010 EPR report, it appears that containers sold are estimated at about 277 million for 2008, so it seems improbable that sales have decreased to only 274 million units for 2011.

Using higher container counts would lead to larger estimates of unclaimed deposits in Table 9.

DSM's current estimate of unclaimed deposits for 2011 is approximately $1.4 million, and this is significantly lower than both DSM's and CRI's previous estimates of unclaimed deposits. This estimate is significantly lower than other reports' estimates:

- $2.4 million: CRI's 2006 Beverage Market Data Analysis data for Vermont (which used a low estimate for beer sales)
- $2.8 million: DSM's 2010 report, "Extended Producer Responsibility for Packaging in Vermont," (page 9).
- $3.7 million: CRI's 2010 Beverage Market Data Analysis data for Vermont

Using CRI's containers sales data would reduce the recycling rate from the current estimate of 89.3% to 76% (using CRI's 2010 data.)

**Page 11 and Table 9. Calculation of Retailer and Redemption Center Costs**
The estimated cost of handling containers appears to be too high, and defies basic business logic. The handling fees received, at 3.6 cents per container, are lower than the purported costs. If the cost of doing business is higher than revenues, that should cause redemption centers to go out of business. It seems likely that costs are lower than 3.8 cents, especially because some redemption centers have enough profit to redeem 6 cents instead of the usual five cents.

This 2013 study relies on cost calculations made in 2007, using calendar year 2006 data. In the 2007 study, the weighted average cost for redemption centers was 3.0 cents per container. Using the online CPI calculator (Bureau of Labor Statistics), the cost adjusted from 2006 to 2012 would be 3.42 cents per container. How was the figure of 3.8 cents calculated?

Also, the sorting required by redemption centers was significantly simplified after 2006, leading to a handling fee that is half a cent lower for commingled materials than sorted materials. We were surprised to see that the new 2013 study did not include a new look at redemption center cost, since so many changes have occurred in the last few years. The reduced cost of operations that has occurred since 2006 doesn't seem to be included in estimating the 2012 cost of operations.

Similarly, the RVM costs are reportedly higher than manual redemption costs. Why would businesses use RVMs if manual collection was cheaper?

**Apparent Errors in Table 9.**

All of the numbers for "material revenue received" are incorrect, using the data in the tables. Material revenues are significantly underestimated. This error overstates costs by $1,252,884 for the existing system and $1,712,634 for the expanded system.

Aluminum prices in this table seem high. If using 34 containers per pound, aluminum beverage containers are priced at $1,836 per ton in this table, and 3-year average UBC prices are $1,798 per ton, using data provided by Novelis. Waste News reported an average rate of $1,660 per ton for the Northeast region in 2012. This could potential understate costs of the existing system by $50,000 or more, depending on the price per ton that you use.

Deposits redeemed adds up to 324,966,302+7,384,616 = <u>332,350,918.</u>
The total number of containers redeemed appears a few rows below that as <u>334,812,456</u>. These two numbers should match. This error may overstate costs by $70,000 for the expanded system.

The collection costs for the Vermont Liquor Control Agency have increased from $270,000 to $323,232, or 19.6%, since 2010. What caused this increase in costs? (Increase of $53,232.)

**Table 9. Cost of Sorting**
It seems that all distributors are eligible to join the commingling agreement, but some choose not to, representing 25% of containers redeemed. This is clearly at their option, and they could opt in to the commingling system at any time. It seems incorrect to consider this a system cost, since the extra half-cent per container cost is not imposed by the system, but rather completely the choice of a few distributors. The extra half cent may overstate costs by $290,338 in the existing scenario, and $585,921 in the expansion scenario.

**Table 9. Assumption about Sorting versus Commingling**
Under the existing system, 75% of containers are commingled and 25% are sorted. Under the expanded system, the sorted percentage increases to 35%. This seems to go in the wrong direction. The expanded system would have many small brands that wouldn't be interested in having their containers sorted for separate pickup – the smaller brands would be more likely to seek commingling. Indeed, the deposit system in Oregon includes water, and around 99% of the

brands use commingling. The comment about Maine in the text on page 9 neglects to mention that the Maine law was structured in a way that allows some brands to refuse to let smaller brands into their commingling agreements. This potentially erroneous assumption inflates the expansion costs by $165,000.

**Table 9. Collection Costs (Third Party and Own)**

Table 9 lists a collection cost of 1.9 cents per unit, totaling $4.6 million. This is considerably higher than TOMRA's reported average collection charge of 1.0 cents per container, which would add up to $2.4 million.

If most containers are being collected by TOMRA at an average of one cent, then the remaining containers must have considerably higher costs in order to bring the average to the reported 1.9 cents. It seems to be a counter-intuitive business decision for a business to continue to collect containers at a cost of more than two cents each, when an opportunity exists for them to cut those costs in half to one cent, saving perhaps $150,000 per year.

This higher per-container collection cost is also surprising given that DSM's previous 2010 report states that "collection, processing and accounting" costs are $2.9 million, which is an average of 1.28 cents per container. This 2010 estimate used 2004 data, when 42% of the containers were collected using third-party collection, which was the cheapest of the 3 collection options. Since that time, a greater percentage of the containers are being picked up by a third party collection service, which should have *decreased* the average per-container collection cost, compared to 2004. Instead, from 2004 to 2011, the collection costs increased 57% ($4.597k vs. $2,929k in 2010) while there was only a 6% increase in the number of containers being collected (228k in 2004 vs. 242k in 2011.) This represents an average cost per container increase of 48%.

Similarly, the costs to the Vermont Liquor Control Board have increased nearly 20% since DSM's 2010 report ($323k vs. $270k.)

In the expanded system, the DSM report assumes that collection costs will be even higher, at 2.3 cents per container for all containers, because of the addition of low density PET containers. However, other deposit systems have used compaction to reduce transportation costs, by as much as a factor of 4. If aluminum and PET were compacted, the trucks could carry many more containers, perhaps *reducing* overall per-container costs, as has been seen elsewhere. The trucks are currently being packed full by volume, but there is plenty of additional capacity by weight.

If beverage companies are conducting their own collection operations at higher costs, that should be considered a "luxury cost," as opposed to a "system cost," since there is a pick-up service available to them for one cent per unit, and since they can choose that lower-cost system at any time.

**Percentage of Containers Through RVMs**

Ten percent was used as the amount of containers through RVMs, versus the 5% reported by TOMRA, which overstates the cost of the program by $145,000. The percentage is then increased to 15% in the expansion scenario, which further increases the reported costs. Is there an explanation for these changes?

As the number of containers going through RVMs increases, the cost per container should decrease precipitously. The RVMs in Vermont are under-utilized, and can accommodate more containers quite easily. Furthermore, if the percentage of containers going through RVMs increases, that means that a greater percentage of materials will be compacted prior to transport, which dramatically reduces transport costs. These reductions are not reflected in the study.

The following table summarizes the apparent errors listed above for Table 9 and their potential impact on system costs:

| Item | Correction would decrease cost of existing system by this amount | Correction would increase cost of existing system by this amount |
|---|---|---|
| "Material revenue received" is significantly underestimated. | $1,252,884 for BB system<br>$1,712,634 for EBB system | |
| Aluminum prices appear high. Using 34 containers/lb, price is $1,836/ton in Table 9. Average of NE Region 3/26/12, $1,660 and Chittenden 2011, $1,340 = $1500 used. | | $722,064 for BB system<br>$759,696 for EBB system |
| Deposits redeemed (324,966,302+7,384,616=332,350,918) should equal containers redeemed (334,812,456). | $70,000 for EBB system | |
| Vermont Liquor Control Agency collection costs have increased 19.6% since 2010. | $53,232 | |
| Distributor non-participation in commingling agreement is optional. This should not be considered a cost of the system. | $290,338 for BB system<br>$585,921 for EBB system | |
| Under the EBB system, sorted beverages increase from 25% to 35%. Smaller brands would be more likely to seek commingling under an expanded system. | $165,000 for EBB system | |
| TOMRA has reported their collection costs at one cent/container. Collection costs (third party and own) is stated as 1.9 cents/container for BB system, and is calculated as 2.3 cents/container for EBB. | $2,177,539 for BB at 1.9c<br>$3,013,312 for EBB at 1.9c<br>$4,285,599 for EBB at 2.3c | |
| The study uses 10% as percentage of containers redeemed through RVMs for BB and 15% for EBB system, rather than 5% provided by TOMRA. | $145,000 | |
| Underestimate of container count – doesn't affect cost, but does affect unclaimed deposits for distributors | | |
| RVM costs estimated at 5 cents per container, when Envipco's average estimate is 2.6 cents | $580,677 for existing system; $1.170 million for expanded system | |
| Rather than 3.62 cents, redemption center and manual costs should be a maximum of 3.42 cents per container, using revised CPI calculation (and less, if new efficiencies are taken into account) | $483,898 for existing system and $664,702 for expanded system | |
| Special trips to redeem should be considered a non-necessary cost of customer choice | $3.1 million in existing system and $4.3 million in expanded system | |

| | | |
|---|---|---|
| Total adjustments | $8,083,568 for BB system<br>$13,152,088 for EBB system | $722,064 for BB system<br>$759,696 for EBB system |

**Cost of "Special trips"**
DSM is the only consulting firm that calculates a "special trip" cost. CRI doesn't believe this cost should be included in the study, as it is the consumer's choice whether to make a special trip or combine with other errands. Furthermore, many redemption center owners indicated that the vast majority of redeemers make purchases at their store during the same trip. Aren't some of the "special trips" also made by third party redeemers? Table 9 shows all costs for trips under "consumers."

**Study Does Not Recommend Improvements to the Existing System to Create Greater Efficiencies**
Vermont has one of the highest-cost container deposit laws in the country. There have been tremendous innovations in other systems, resulting in per-container costs that are 2 to 3 times cheaper than Vermont's. The scope of work for the 2013 DSM study required suggestions for improvement of the existing system. For example, it is obvious that the companies that are using separate sorting, rather than commingling, have an opportunity to save half a cent per container, and save the system over $290,000 annually. The same is true with collection costs, which can be provided by a third party for an average cost of one cent per container, as opposed to the 1.9 cents that is used in the study.

Page 9 of the study dismisses Hawaii's system as being too different from Vermont to use any data from Hawaii. However, we must call attention to the fact that Hawaii's system operates at a net cost of 1.5 cents per container, and this includes all handling, administration, sorting, material revenue, transportation, and transportation *between islands, and shipment of all materials to the US mainland*. The system in Oregon has been completely revamped in the last several years, and the changes have been implemented by the beverage industry that manages and finances the system.

**Vermont Liquor Control Revenue for Recyclables**
Why is this value zero? Spirits bottles are generally heavy, clear glass, which commands a higher price than other glass colors.

**Page 1, Total Amount of Recycling in Vermont**
This report uses a recycling total of 95,800 tons, along with a disposal rate of 420,000, which adds up to 515,800 tons, for an overall recycling rate of 19%. We recommend that the report use the same accounting of recyclables as was used in DSM's 2010 EPR report. The exclusion of over 100,000 tons of other recyclables and organics is confusing, because prior reports on Vermont's recycling have included all recycling and organics diversion, and have listed the State's recycling rate at 33%.

**Page 2, Correction to Third Full Paragraph**
Five states have expanded their container deposit laws (CA, OR, NY, CT and ME), and Hawaii's law was initially passed as an expanded law, for a total of six.

**Page 2, Fifth Full Paragraph**
Also, the central issue with the container deposit law, and any Extended Producer Responsibility law is: who pays? A benefit of container deposit laws is that the producers and consumers pay for the program, not ratepayers and taxpayers. The producers are supposed to have a natural incentive to continuously improve the system in order to minimize costs. Also, we suggest adding "reduced beverage container litter" to the list of benefits of expansion.

**Page 2, Footnote**
If the point of the footnote was to explain Vermont's 89% redemption rate, we believe that the central reason is the very last reason mentioned, "inaccuracies in the estimates provided by the distributors." Only Michigan, with a 10-cent deposit, has a higher reported redemption rate. Maine's rate has been verbally reported to be 90%, but there are no official statistics. Other reported redemption rates are lower (MA, NY, CT, HI and CA.)

**Page 5, Figure 1**
Aluminum seems to be left off the list in the boxes for processing and end users.

**Page 5, Bottle Bill System Description**
This entire description assumes individual consumers purchase, consume and return beverage containers. In order to be more complete, this description should also include references to the other ways that beverages are purchased and returned, like through bars and restaurants, offices, public spaces, charities, etc.

**Page 7, Collection Costs and Other Benefits of Current and Expanded Bottle Bill**
The study doesn't explain that the current bottle bill is already avoiding collection and disposal costs for municipalities, taxpayer/ratepayers and businesses. There are many beneficiaries, including businesses, public spaces disposal and recycling costs, charities, etc.

**Page 7, "Valuable" Materials**
The language on page 5 characterizes PET and aluminum as "valuable" materials. In this study's context, which looks at both costs and revenues of recycling collection, aluminum certainly has a higher scrap value than the cost of collection, but PET does not. Using Ontario, Canada's activity-based costing method, PET recycling through curbside has a gross cost of $1,287 and scrap value of $375 for a net cost of $912 per ton.

**Page 8, First Paragraph**
The first sentence seems to assume that if the bottle bill is repealed, all the bottle bill material will be recovered by a single stream recycling system, when in fact, we all know that some materials will be recycled and some will be disposed. It is not clear if this extra disposal was quantified in the study, as it does not appear as a line item in Table 11.

**Page 8, Second Paragraph**
This section mentions a "bar and restaurant recycling program" and other programs, including "public spaces." We would add public education to this list. The cost for these programs needs to be estimated, and we don't see cost estimates for the bar and restaurant program or for new public education programs.

**Page 11 12 and 13, Various Surveys Conducted, but Results Not Shown**
The study mentions that surveys were conducted, but the results of the surveys aren't listed. These include the redemption center surveys, hauler survey, commodity value differences, dual versus single stream versus source separated collection. Did the study team estimate costs of transitioning from dual stream to single stream, for instance?

**Page 13, System Modeling**
The study says that "the data from the Rutland facility would be the most relevant because the Chittenden District MRF is aging and plans to upgrade sorting equipment…."
Throughout the report, as in Table 3, for example, the title includes the words, "Existing System." However, the selection of the Rutland MRF was done to examine a "best case scenario," rather than a facility that was representative of the average for the "existing system." This is a factor that may lead to lower-than-average reported contamination rates in Table 3.

**Page 14, Reclaimers/Processors**
We were surprised that the study did not more thoroughly evaluate paper contamination rates, since this is the largest single item in the recycling stream. Also, many paper mills provide written monthly reports to MRFs, so the data are readily available from the MRFs in Vermont.

This report does not include information on the prices received for bottle bill collected PET and glass compared to single-stream curbside collected glass and PET, and it should include that information.

**Page 15, Glass is Broken on Collection Vehicles**
The report says that glass is broken early in the MRF process. In reality, the vast majority of glass arrives at a MRF already broken, as it has already been broken on the collection vehicle, and the report should include that information.

**Page 15, PET Plastic: Caps, Rings and Labels**
Twenty percent for caps, rings, labels and sleeves is higher than figures that have been quoted to us (13-16% is the average we are familiar with). Also, the large base cups that are typical in larger soda bottles are not present for the beverages that would be covered under an expanded bottle bill, so that figure would go down.

**Tables 1 and 2, No Mention of Sparkling Water**
Is sparkling water included in the soda numbers?

**Tables 1 and 2, Container Weight Discrepancies**
The information presented in Tables 1 and 2 contain a number of discrepancies that affect the accuracy of the data throughout the report including:

Weights recovered by the deposit system are underestimated throughout Table 2. For example, on Table 1 units per ton for glass beer containers is calculated at 4,002 (61,850,057/15,453), while on Table 2 it is calculated at 4,492 (58,432,995/13,007). Using the Table 1 calculation of units per ton to determine tons returned would result in 14,600 tons of material returned (58,432,995/4002) – a difference of 1,593 tons.

Container weights in every category vary between Table 1 and Table 2. Many of the differences are slight, which is normal. However, some differences are large. The table below indicates calculated weights differing by more than 10%.

| Container Weights | | Table 1 (Sales) | | Table 2 (Returns) | |
|---|---|---|---|---|---|
| | | Units/ton | Units/lb | Units/ton | Units/lb |
| **Beer** | | | | | |
| | ***Glass*** | 4,002 | 2.00 | 4,492 | 2.25 |
| | ***PET*** | 25,286 | 12.64 | 30,570 | 15.28 |
| **Subtotal** | ***Glass*** | 4,022 | 2.01 | 4,503 | 2.25 |
| **Liquor** | | | | | |
| | ***Glass*** | 2,432 | 1.22 | 1,899 | 0.95 |
| | ***PET*** | 6,384 | 3.19 | 15,891 | 7.95 |

**Table 2, Bottle Weights, Especially for Redeemed Glass Bottles, Apparent Math Error**
The weight of glass beer bottles seems to be underestimated by nearly 1,600 tons. If the number of units redeemed is correct, then the tonnage, at 2 bottles per pound, should be 14,608. This would correct the disparity at the bottom of the table, which indicates 94% of glass bottles returned by unit count, but only 86% returned by weight.

In addition, glass is presented as having the highest return rate by container (94%), but the second highest by weight (86%). Being the heaviest material type, it would make sense that its percentage by weight would also be highest.

There are a few percentages in the table that seem to be errors, like liquor bottles adding up to over 120%. The redeemed weight for PET liquor bottles also seems to be too low, and should perhaps be 45 tons, instead of 18 tons.

**Page 19, MRF Processing Losses**
There's no mention here of losses due to cross-contamination of materials, like paper ending up in the glass stream and vice-versa.

The outgoing glass is listed as containing 6.5%, while processors of Vermont MRF glass have reported much higher figures, in the range of 29% and up.

**Page 21, Table 3**
The reported loss rate for fibers, at 1%, is very low, and not in line with what has been reported by paper mills. A loss rate of at least 10% would be more accurate.
The glass loss rate is also very low, and should be increased to 35 - 40% to align with glass industry stakeholders reported losses.

In table 3 and elsewhere, glass from curbside recycling is all characterized as "sold" or "recycled," which masks the fact that some of the material is used as aggregate, and that much of the material has a zero or negative dollar value. The glass that is used as aggregate should be listed as such, and glass that is recycled into new products, like bottles or fiberglass, should be listed as such.

**Page 22, Table 4 HDPE, LDPE, Other Plastic and Steel, also Page 26, Table 8 Apparent Math Errors**

Table 4 estimates that 347 tons of these 4 material types would be recycled under an expanded bottle bill. Then, Table 8 correctly lists the *recovered* amount, 260 tons of these materials in the second column, but these materials are blank in the final column of the table, which appears to be an error. These materials should be included to the column "Vermont BB/EBB (tons)," which would alter the total tons in that column. These various material types are absent from Table 5 and subsequent tables. We did not check whether or not they were included in Tables 15 and 16.

Also, it appears that the bottle bill glass tonnage, after losses, should be 19,600 (20,000 x .98 = 19,600).

**Table 5, Bottom Half, Aluminum, Apparent Math Errors**

Going from bottle bill to expanded bottle bill, the bottle bill system gains 161 tons. However, the corresponding single stream system loses 200 tons of aluminum, which is more than the bottle bill program gained, which seems like an error. Since some of the aluminum gained in a bottle bill expansion would come from disposal and some from recycling, the amount lost from the single stream program should be less than 161 tons.

**Page 22, Table 5 Return Rate Estimate for Glass with Expanded Bottle Bill**

The return rate estimates for aluminum (89%) and PET (76%), are the same for the BB and the EBB. However, the return rate for glass in the expanded bottle bill has dropped from the table 2 rate of 94% (or 86% by weight, which is a result of an apparent error in the beer bottle weights, as discussed earlier) down to 82% in table 5. It appears that the glass recycling rate for the EBB should follow the same logic as the other material types, which would make it 94%, or 22,770 tons, for a difference of 2,816 tons, or about 10% of the expanded bottle bill material for all material types combined.

**Page 22, Table 5 and Other, Rounding Protocol**

The use of rounding to the nearest hundred tons is sometimes used and sometimes not, even in the same table, such as Table 5. It is certainly easier to follow the logic and understand the origin of calculations when the numbers are not rounded. (Rounding to the nearest hundred tons is two orders of magnitude difference on the precision of numbers, when placed next to numbers that are only rounded to the "ones.")

**Page 24 and Onward, Other Plastics**

The future recovery projections all include "other plastics," which is not a required item in Act 148. Especially for the areas of the state that have drop-off recycling, the municipalities may or may not choose to include these items, and these tonnage projections for other plastics may be too high.

**Page 25, Table 7, Aluminum Recycling Increases Appear Too High**

In this study, aluminum recovery is estimated to increase more than four-fold, or 325%, which seems to be too high an estimate.

Much of this projected growth in aluminum recycling is from foil, closures, trays, etc. Note that aluminum screw caps and foil lids on yogurt cups are very difficult to recover. The estimated tonnage of these non-beverage aluminum materials in the Vermont waste stream appears to be considerably different from the nationwide average (24% of aluminum packaging, as opposed to the 40% estimated in the 2013 DSM study). Nationwide, the USEPA estimated the recovery rate for "foil and closures" at 9.5% for 2008, yet the 2013 DSM study projects a recovery rate of 40% for foil and closures.

Also, these materials are NOT accepted in bales of used beverage containers (UBCs), and must be baled separately, because they are a different aluminum alloy. The scrap revenue per ton for other aluminum packaging is about 40% of the price of a bale of UBCs.

Also, in the 2013 DSM study, aluminum is the only material type that is projected to experience a 325% recovery rate increase, while others are much lower, like fibers at 49% increase, PET 38% increase, glass 19% increase, steel 14%, etc.

| **Material Type** | **Tons Collected** | | **% Change** |
|---|---|---|---|
| | ***Table 3*** | ***Table 7*** | |
| Aluminum Beverage MSW SS | - | 400 | ∞ |
| Aluminum | 200 | 450 | 125% |
| ***Subtotal*** | **200** | **850** | **325%** |
| Glass Beverage MSW SS | - | 2,000 | ∞ |
| Glass | 10,600 | 10,600 | 0% |
| ***Subtotal*** | **10,600** | **12,600** | **19%** |
| PET Beverage MSW SS | - | 500 | ∞ |
| PET Beverage MSW SS | 1,300 | 1,300 | 0% |
| ***Subtotal*** | **1,300** | **1,800** | **38%** |
| HDPE, LDPE, Other Plastic & Steel Beverage MSW SS | - | 300 | ∞ |
| HDPE Plastics | 1,300 | 900 | -31% |
| ***Subtotal*** | **1,300** | **1,200** | **-8%** |
| Other Plastics | 1,500 | 2,230 | 49% |
| Steel Cans | 1,600 | 1,980 | 24% |
| Fibers | 61,200 | 91,000 | 49% |
| **TOTAL** | **77,700** | **111,660** | **44%** |

**Page 30, Table 10 compared to Table 12, Increases in Recycling, Pounds per Household**
The pounds per household isn't shown for drop off. The number 255 should be added to the table. We also suggest including "pounds per household" for drop off in Table 12; the figure is 410, or a <u>61% increase</u> compared to the existing figure (255) in Table 10. This is a very high estimated increase, and falls outside of the range of increases that is normally seen for a change to pay-as-you-throw.

The study doesn't expect to see such a behavior change in curbside households, as their "pounds per household" only increase from 433 to 437. The increase in curbside recycling comes entirely from adding 44,000 households that are provided with recycling service.

Overall, the increases in recycling that are projected in this study are very high. The number of households receiving recycling increases 19%, but the recycling tonnage collected from households increases by 51%.

**Page 32 and Onward, Collection Costs Seem Too Low and Difficulty of Adoption Not Recognized**

It is a given that the most urban, easiest-to-serve areas in Vermont are the ones that already have good recycling services provided. Those residential and commercial customers that do not already have recycling service will likely be more costly to serve and/or more reluctant to recycle. Jurisdictions like the Province of Ontario, Canada and the State of California, which have "best practice" laws that mandate recycling and over 20 years' experience with mandatory recycling, have found it difficult to get commercial customers to opt for recycling service, and are still working toward universal adoption of this practice. In the DSM 2013 study, there is no mention of the time and complexity, nor the enormous public education efforts and number of years that will be required to achieve these dramatic increases in recycling.

This 2013 study seems to use the same dollars per household as a prior 2010 DSM report: $4/household for curbside, and $6.50 per household in some areas. Note that this prior DSM report was written in 2010, and it refers to cost estimates for 2008. Were the same cost estimates used for 2013, and did they include an increase for CPI, PPI or any other inflation factor?

**Page 36, Litter Collection Cost Per Ton Underestimated**

The text references a 2009 DSM report for Rhode Island, but that litter collection cost of $1,200, which in turn, came from a 2005 study conducted for Washington State. It appears that no CPI or other inflation factor was used to bring those costs up to a 2013 dollar amount. A more recent study by Keep America Beautiful estimated litter collection costs at $2,300 per ton, or nearly double the amount that is used in this 2013 report. The impact of this potential change would be to change litter collection savings to $1,562,000 for the existing system and $2.3 million for the expanded system.

## Vermont Beverages Sold in 2010 (millions of units)

| Container Material Type: | Traditional Materials | | | | | | | | | Non-Traditional Material | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Plastic Bottles | | | Glass Bottles | | | | | | | | |
| **Beverage Type** | **Aluminum Cans** | **Steel Cans** | PET | HDPE | Total Plastic | One-Way | Refillable | Total Glass | **Subtotal, Traditional Materials** | **Gable-top cartons** | **Aseptic Boxes** | **Foil Pouches** | **Subtotal, Non-Traditional Materials** | **Total, All Materials** |
| **1. Carbonated** | | | | | | | | | | | | | | |
| Carbonated Soft Drinks | 110.5 | 0.0 | 44.1 | 0.0 | 44.1 | 1.6 | 0.2 | 1.8 | 156.4 | 0.0 | 0.0 | 0.0 | 0.0 | 156.4 |
| Beer | 92.8 | 0.0 | 0.1 | 0.0 | 0.1 | 65.6 | 0.0 | 65.6 | 158.5 | 0.0 | 0.0 | 0.0 | 0.0 | 158.5 |
| Domestic Sparkling Water | 0.8 | 0.0 | 2.3 | 0.0 | 2.3 | 3.1 | 0.0 | 3.1 | 6.2 | 0.0 | 0.0 | 0.0 | 0.0 | 6.2 |
| **1. Subtotal, carbonated** | **204.1** | **0.0** | **46.5** | **0.0** | **46.5** | **70.3** | **0.2** | **70.5** | **321.0** | **0.0** | **0.0** | **0.0** | **0.0** | **321.0** |
| **2a. Non-carbonated, non-alcoholic** | | | | | | | | | | | | | | |
| Domestic Non-Sparkling Water (≤1 gal) | 0.0 | 0.0 | 125.4 | 2.2 | 127.6 | 1.3 | 0.0 | 1.3 | 129.0 | 0.0 | 0.0 | 0.0 | 0.0 | 129.0 |
| Sports Drinks | 0.0 | 0.0 | 7.1 | 0.0 | 7.1 | 0.0 | 0.0 | 0.0 | 7.1 | 0.0 | 0.0 | 0.0 | 0.0 | 7.1 |
| Fruit Beverages | 1.7 | 0.1 | 12.1 | 2.4 | 14.6 | 4.0 | 0.0 | 4.0 | 20.4 | 6.5 | 8.0 | 9.0 | 23.5 | 43.9 |
| Ready-to-drink Tea | 4.1 | 0.0 | 6.5 | 4.3 | 10.8 | 3.9 | 0.0 | 3.9 | 18.9 | 1.0 | 0.0 | 0.0 | 1.0 | 19.8 |
| Energy Drinks | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 | 4.6 |
| 2a. Subtotal, non carbonated, non-alcoholic | 10.5 | 0.1 | 151.1 | 9.0 | 160.1 | 9.2 | 0.0 | 9.2 | 179.9 | 7.5 | 8.0 | 9.0 | 24.4 | 204.3 |
| **2b. Non-carbonated, alcoholic** | | | | | | | | | | | | | | |
| Domestic Table Wine | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 11.5 | 0.0 | 11.5 | 11.5 | 0.0 | 0.0 | 0.0 | 0.0 | 11.5 |
| Spirits/Liquor * | 0.0 | 0.0 | 1.8 | 0.0 | 1.8 | 3.0 | 0.0 | 3.0 | 4.8 | 0.0 | 0.0 | 0.0 | 0.0 | 4.8 |
| 2a. Subtotal, non carbonated, non-alcoholic | 0.0 | 0.0 | 1.8 | 0.0 | 1.8 | 14.4 | 0.0 | 14.4 | 16.3 | 0.0 | 0.0 | 0.0 | 0.0 | 16.3 |
| **2c. Non-carbonated, dairy** | | | | | | | | | | | | | | |
| Milk | 0.0 | 0.0 | 0.9 | 8.5 | 9.4 | 0.0 | 0.4 | 0.4 | 9.8 | 18.8 | 0.0 | 0.0 | 18.8 | 28.6 |
| 2c. Subtotal, Non-carbonated, dairy | 0.0 | 0.0 | 0.9 | 8.5 | 9.4 | 0.0 | 0.4 | 0.4 | 9.8 | 18.8 | 0.0 | 0.0 | 18.8 | 28.6 |
| **2. Subtotal, Non-carbonated** | **10.5** | **0.1** | **153.9** | **17.4** | **171.3** | **23.6** | **0.4** | **24.0** | **206.0** | **26.3** | **8.0** | **9.0** | **43.2** | **249.2** |
| **TOTAL** | **214.6** | **0.1** | **200.3** | **17.4** | **217.8** | **93.9** | **0.6** | **94.5** | **527.0** | **26.3** | **8.0** | **9.0** | **43.2** | **570.2** |

**Summarized notes and sources:**

Source (for citation purposes): "2010 Beverage Market Data Analysis," The Container Recycling Institute, 2013.

Sales are derived from: "Beverage Packaging in the U.S., 2011 Edition," Beverage Marketing Corporation (BMC), Dec. 2011; with additional data from BMC, the Beer Institute, the Wine Institute, and the Distilled Spirits Council. Data excludes wine coolers, champagne, sparkling wine, frozen fruit concentrates, and non-dairy "milk" beverages.

CRI sales estimates are based on regional industry data; they differ from what is reported to the MA Dept. of Environmental Protection.

U.S. Census Bureau, 2010 state population estimate (million): 0.6

* Spirits/liquor data (4.8 million units) was derived by multiplying 2010 U.S. unit sales (Beverage Marketing Corporation/BMC) by Vermont's 2010 share of the US market (per Distilled Spirits Council of the U.S./DISCUS.) According to the National Alcohol Beverage Control Association (NABCA), 4.4 million units were sold in Vermont in 2011.

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April 5, 2013

Bryn Oakleaf
State of Vermont Department of Environmental Conservation
Waste Management & Prevention Division
1 National Life Dr, Davis 1
Montpelier, VT 05620-3704
Bryn.Oakleaf@state.vt.us

Dear Ms. Oakleaf:

Upon further review of the report, *Comparison of System Costs and Materials Recovery Rates: Implementation of Universal Single Stream Recycling With and Without Beverage Container Deposits*, March 4, 2013, we would like to supplement our comments originally submitted on March 29, as well as correct some typographical errors that appeared in our document.

Our additional comments are as follows:

**Comments on Table 14**

Table 14 was required by Act 148, as the report quoted from Act 148, on page 3, emphasis added:

"(2) An estimate of the cost of implementing **expansion** of the beverage container redemption system to include containers for **all noncarbonated drinks**, including an estimate of the commodity value lost by **municipalities** due to diversion of recyclable materials from single-stream recycling programs."

As currently structured, Table 14 does not correctly respond to Act 148's instructions.

The current structure of Table 14 is flawed in the following ways:

1. <u>Table 14 should be for the expansion scenario only.</u> Table 14 includes both the existing container deposit system, as well as the expanded system. Act 148 only called for an examination of the impact of an expanded system. The existing system has been in place since the 1970's, so none of those materials can be considered "lost" to municipalities, as the municipalities haven't had the responsibility for their recycling and disposal for more than 40 years.

2. DSM's Table 14 included **all** bottle bill material, when it should have estimated only materials that municipalities could collect. DSM's Table 14 assumes that, without the bottle bill or expanded bottle bill, the full quantity of materials would be recycled at exactly the same recovery rates as the bottle bill, and those full quantities are assumed to be "lost" to municipalities in this table. This is obviously not the case. Without a deposit, beverage containers would be recovered at a lower rate, as is assumed elsewhere throughout the report. In addition, many containers would be *disposed* of and not recycled.

   Act 148 requires new collection programs throughout the State, so the new single stream system will occur, with or without an expansion of the bottle bill. The construct for Table 14 should therefore be the difference between a "single stream plus existing bottle bill" scenario and a "single stream plus expanded bottle bill" scenario.

3. Table 14 didn't use correct market rates for recyclables. Table 14 should be using the market rates for recyclables that are received by the MRF, not the higher market rates that are received for bottle bill materials.

4. Table 14 should include the cost of collection of containers, using activity-based costing methods. DSM referred to this cost allocation method in their 2010 report for the Vermont Soft Drink Association and also used a similar methodology that includes collection and processing costs in their 2009 report to the State of Massachusetts.

5. Table 14 should also include disposal cost savings. An expanded bottle bill would pull materials out of both the recycling and disposal streams, and this is the assumption that is used elsewhere in the report. However, the disposal cost savings have not been accounted for in Table 14, and should be.

Attached is a recreation of Table 14 isolating the cost savings to Vermont municipalities of an expanded beverage container redemption program. We have left the recovery numbers unadjusted so that one can clearly see which tables they came from, however our other comments (dated March 29) are still relevant. Also, we did not include a line item for savings from disposal collection and processing, but that should be included.

**Comments on Table 15**

Table 15 should use the appropriate GHG calculations based on the various end-uses for glass. They are:

- 780 pounds eC02 per ton prevented by recycling glass into containers
- 28 pounds eC02 per ton prevented by recycling glass into aggregate
- 10 pounds eC02 per ton incurred by landfilling or use as daily cover

**Corrections to prior comments**

We would like to correct some errors in our comments submitted on March 29.

On page 2 under *Apparent Errors in Table 9*, we mistakenly list the overstated costs of an expanded system as $4,552,349. The correct amount is **$1,712,634**.

On the Table 9 summary chart on pages 4 and 5, the correct total adjustments for the following columns are as follows:

Corrections would decrease cost of existing system by this amount
**$8,083,568 for BB system**
**$13,152,088 for EBB system**

Corrections would increase cost of existing system by this amount
**$722,064 for BB system**
**$759,696 for EBB system**

Attached is an amended version of our original submission correcting these errors.

Thank you again for the opportunity to provide our comments. Please feel free to contact me if you have any questions.

Sincerely,

Susan V. Collins

Susan V. Collins
President

## Cost Savings to Vermont Municipalities from Implementation of Expanded Beverage Container Redemption System

| | SS tons recovered, from Table 5, under "SS with BB" scenario[1] | SS tons recovered, from Table 5 under "SS with EBB" scenario[1] | Tons difference between scenarios | Gross collection and processing costs per ton, from Stewardship Ontario[2] | Material revenue per ton, at Vermont MRF prices[3] | Total cost per ton, net of revenue | Total collection and processing cost savings to municipalities from expansion of the bottle bill |
|---|---|---|---|---|---|---|---|
| Aluminum | 849 | 649 | 200 | $1,120.16 | $1,600.00 | $(479.84) | $(95,968.00) |
| Glass | 12,600 | 8,000 | 4,600 | $131.39 | $(23.00) | $154.39 | $710,194.00 |
| PET | 1,800 | 1,000 | 800 | $1,287.22 | $340.00 | $947.22 | $757,776.00 |
| HDPE | 300 | 300 | - | $1,202.61 | $432.44 | $770.17 | - |
| **Total** | **15,549** | **9,949** | **5,600** | | | | **$1,372,002.00** |

[1]HDPE tons recovered from DSM report Tables 7 & 8

[2]Stewardship Ontario Fee Calculation Tables with 2011 recycling costs to set fees for 2013;
Glass costs derived from averaging clear glass costs ($136.70) and colored glass costs ($126.08)
http://www.stewardshipontario.ca/stewards/library/Fee-Rate-Archive#Fee Calculation Tables

[3]Obtained pricing data from various sources:

*Aluminum* - Per Alcoa MRF revenue is 10c/lb ($200/ton) less than BB; UBC bales worth $1,800/ton, 3 year average, from Novelis, therefore MRF estimate is $1,600

*Glass* - NAPCOR letter to ANR dated March 29, 2013

*PET* - NAPCOR letter to ANR dated March 29, 2013

*HDPE* - Stewardship Ontario Fee Calculation Tables 2011