



CRI Comments on “Extended Producer Responsibility for Packaging” A Report by DSM Environmental for the Vermont Beverage Association

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Founded in 1991, the Container Recycling Institute (CRI) is a national non-profit organization that studies and promotes policies and programs that increase recycling of beverage containers and packaging, and shift the social and environmental costs associated with manufacturing, recycling and disposal of container and packaging waste from government and taxpayers to producers and consumers.

In March 2010, DSM Environmental, a consulting company based in Vermont, released a paper entitled *Extended Producer Responsibility for Packaging in Vermont*. It was reportedly prepared for the Vermont Beverage Association (VBA) and offers one viewpoint on how to improve recycling in Vermont, with supporting analysis. We believe that the work is flawed and provides misleading and erroneous information and analysis. The following briefly describes the most critical errors associated with the report.

1) DSM/VSDA’s projected recycling increases resulting from the proposed EPR-based program changes to Vermont’s curbside recycling program are overestimated by applying unrealistic recycling rates from Germany. The differences in program design are so vast as to make a side-by-side comparison meaningless.

DSM/VSDA attempts to project potential statewide increases in recycling from applying a new EPR-based framework to curbside programs and eliminating the container deposit-refund program. To do this, they use recycling rates attained in the German waste management system, which also incorporates EPR principles. The rates achieved in Germany are very high: 82% for glass; 90% for steel; 77% for aluminum cans; and 80% for paper and cardboard. These data from Germany, reported to the European Commission in 2006 under the Packaging and Packaging Waste Directive, include all material recycled under the combination of the residential recycling program (DSD), recycling from other sectors (commercial, institutional, etc.), and from Germany’s beverage container deposit-refund system, which has a standalone recycling rate of 98.5%. Germany’s law applies to sales packaging, secondary packaging and transport packaging, and the reported results include commercial sector packaging as well as household packaging.

The German recycling results achieved are therefore inapplicable to any scenario lacking the elements of Germany’s recycling programs, including:

- A container deposit-refund system;

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- A bottle bank for returning glass containers for every 1,000 inhabitants;
- Curbside collection of paper and cardboard in one container;
- Curbside collection of the remaining packaging types in a separate bag;
- Inspection of residents' packaging bin sorting with direct communication to residents if they fail to sort correctly;
- For sales packaging, there are mandatory targets by material type of 75% for glass, 70% for tinplate, 60% for aluminum, 70% for paper and cardboard, 60% for plastics, and 60% for composites;
- Mandatory take-back of transport packaging by manufacturers and distributors.

Applying German rates to the system that is outlined by DSM on page 10 of their report, which identifies increased recycling from “households and from bars and restaurants”, but “excludes commercial recycling, economic recycling and scrap metal recovery” produces inaccurate, inflated projections. Currently in Germany over two-thirds of recycling comes out of the commercial sector and approximately one third from householdsⁱ.

DSM would have been a little closer to the mark if they had used recovery rates from Ontario, Canada's EPR-based curbside recycling program. In Ontario, mandated comprehensive municipal recycling has been in place for over 17 years. In the Ontario program, which covers the residential sector only, the recycling (versus collection) rates for the residential sector are 58%ⁱⁱ for glass; 59% for steel; 47% for aluminum; and 68% for paper and cardboard after material yield loss (losses at the recycling stage) is accounted for.ⁱⁱⁱ The Ontario Blue Box system is defined to cover 11% of the wastes generated in the Province, and recovers 6% of the Province's waste. Using more realistic rates like these will significantly reduce the projections made by DSM/VSDA.

2) DSM/VSDA overestimates costs of the deposit return program and excludes nearly \$3M in unredeemed container deposit revenue^{iv}, which is used to offset industry costs.

DSM/VSDA estimates the costs of the container deposit-refund system (“bottle bill”) in Vermont at \$7.8 million per year. In their analysis, unredeemed deposits are not counted. In real terms there is nearly \$3 million in unredeemed revenue that is used by the beverage industry to offset costs. DSM's report also separates out the lower per-ton costs of the Vermont Department of Liquor Control into a separate line item, which affects the average cost calculation of the rest of the program. When unredeemed deposit revenue is applied, and when liquor costs are combined with the rest of the program, the cost per ton is reduced from \$448 to \$274, a reduction of 39%.

In addition, cost estimates for the deposit-refund program are overestimated by adding an additional huge estimated cost (\$3.7 million) of driving to redemption centers, but does not account for the fact that many residents in Vermont do not have garbage collection and have to

drive out of their way anyway. Most people do not make a dedicated car trips to a redemption center, rather make redemption part of a multiple errand run.

Further, cost savings to municipalities from the deposit-refund program are not accounted for in terms of reduced costs of recycling collection, processing, garbage disposal and litter abatement. We find these omissions perplexing, when DSM's own analysis done for other States (RI and MA) do account for these additional savings and costs. See section 5 for additional details.

3) DSM/VSDA suggests that “operating two [recycling] systems – one for beverage containers, and one for all other packaging and paper robs both systems of the efficiencies necessary to reduce recycling costs.” Experience from North America demonstrates the opposite: efficiencies within the curbside program actually improve with fewer beverage containers, municipalities save money, and collectively both programs recover greater quantities and better quality of material.

The idea that a deposit system will “rob” containers from curbside recycling programs is a misunderstanding of current circumstances. With recycling rates for beverage containers in non-deposit states at a paltry 24%, it would be more accurate to say that a container deposit-refund program “robs” most containers from landfills and litter pickup crews.

Vermont's deposit-refund system for beverage containers and its curbside recycling program for households overlap to a minor degree with respect to household beverage container disposal and recycling, but for the most part they have fundamentally different targets. Curbside recycling targets containers consumed in the home, while deposit-refund programs target containers everywhere that people drink: at home, on-the-go, at work, at parks, at sporting and similar events, in bars and restaurants, at schools, and elsewhere. Placing a refundable deposit on each container ensures that the vast majority—85% in Vermont—are returned for recycling. With an average beverage container recycling rate of only 24% in U.S. states that do not have a deposit-refund system,^v Vermont's program is a national success story, entirely funded by beverage distributors and beverage consumers rather than taxpayers.

Curbside recycling is a *complementary* program that primarily targets household paper and packaging. By weight, paper products like newspapers, magazines, catalogs, household paper, junk mail, envelopes and phone books make up 55-80% of the material collected at curbsides, and is on the higher side for states with container deposit programs. Paper collection and recycling is significantly cheaper than container recycling. Activity-based costing analysis for Ontario's EPR-based curbside recycling program, for example, values paper recycling at a net cost of about \$25 per ton, whereas packaging (consisting mainly of paperboard, beverage and food containers, and miscellaneous plastic packaging) costs about \$400 per ton. Plastic and glass bottles are voluminous and take up a lot of room on a collection truck relative to the same tonnage of paper. Glass bottles also break and significantly reduce the quality and recyclability

of the paper and other packaging that they are mixed with. The only material that “adds value” to the curbside program is the aluminum can, which also adds value to the deposit-refund program.

When the Canadian province of British Columbia expanded its container deposit-refund program to include alcohol, water and juice containers, municipalities estimated approximately \$10 million in savings.^{vi} According to a report by the City of Toronto, extending the deposit to wine and spirit containers alone resulted in a net savings to the City’s curbside program of \$448,000 in 2007 and \$381,000 in 2008; these savings came from NOT having to manage these containers for either recycling or disposal.^{vii} Overall, the expansion diverts an additional 68,000 metric tons of glass province-wide (annually). DSM’s own analysis for the State of Massachusetts shows that municipalities in that state would save \$5-\$7 million per year by expanding their deposit-refund program.

These findings are consistent with findings from the Congressional Research Service (CRS), which prepares reports for the U.S. Congress. CRS states that both a deposit-refund system and curbside recycling are necessary to achieve high recycling rates and that both programs result in lower costs for curbside recycling. Specifically:

“Both systems can serve as elements of comprehensive recycling programs. Neither constitutes a comprehensive program by itself. Neither excludes the use of the other.”

“Deposit systems skim potential sources of revenue from curbside programs, but they also reduce the operating costs of curbside programs. Local governments would appear to achieve greater diversion of solid waste from disposal at a lower cost per ton if both a bottle bill and a curbside collection program were in place.”^{viii}

The argument that one system is better than two has no evidentiary basis, and is de-bunked in a recent report by Eunomia Research and Consulting as “pure speculation based on the unlikely scenario in which there is no effect on the logistics of the pre-existing system.”^{ix}

DSM/VSDA’s entire analysis pits one system against the other, with no consideration of complementary economic and environmental benefits. Because both systems target and capture different products from different points of generation, such comparisons are of no value in assessing the effects of repealing the existing container deposit-refund program.

4) DSM/VSDA suggests that high recovery rates achieved through the deposit-refund program come at a significant cost compared with curbside collection. Their apples-to-oranges evaluation compares the cost of a household-only curbside system, whose tonnage is mostly paper (which as noted elsewhere is less costly to recycle), to a system that collects more costly materials from all points of generation.

DSM/VSDA compares a program that collects mostly paper from households only, to a program that collects bottles and cans from all over at a rate of 85%. Not only is the basket of targeted

material different, but so are the performance and scope of the two programs (all containers versus at-home only).

A more appropriate (or “apples-to-apples”) comparison would be to estimate the curbside cost for collecting beverage containers only. Using activity-based costing, Ontario, Canada estimates that beverage containers (glass, plastic, aluminum cans, and juice boxes) are collected at curbside at a recycling rate of about 50% and at a cost of approximately \$300 per ton, to which then are added the costs of disposing of the additional 50% of containers that are disposed or littered.

DSM/VSDA estimates that the deposit return program in Vermont costs approximately \$448 per ton at a recycling rate of 85%, but fails to account for decreased disposal and litter abatement costs for business and state and municipal government. As mentioned earlier, DSM also excludes liquor bottle recycling and nearly \$3 million in revenue from unredeemed deposits which are used to offset costs, for a net cost to industry of approximately \$274 per ton.

Also as mentioned earlier, DSM/VSDA also applies a questionable \$3.7 million in additional “transportation costs” associated with consumers transporting containers for refund. In Vermont, empty containers can be redeemed at both retailers (e.g., grocery stores) and redemption centers and most people return containers when they go shopping, or as part of another errand. Although there are bottle scavengers who make “dedicated” trips to redemption centers, dedicated trips for container redemption make up only a small portion of total returns (and they are not always delivered by vehicle).

5) The DSM/VSDA economic analysis omits costs incurred from increased litter clean-up and disposal.

The DSM/VSDA paper is silent on the cost impacts of increased litter and disposal. The Container Recycling Institute has found that deposit-refund systems reduce littering of used beverage containers by 70%-80%, and total littering by 30%-40%.^x In Hawaii, for example, where a deposit-refund program was introduced in October 2005, the amount of metal cans, plastic and glass bottles in the litter stream was reduced by 39% by 2007, just two years after the program was implemented.^{xi}



Keep America Beautiful recently released a report that places average litter abatement costs at \$2,300/ton. These costs are incurred not only by municipalities, but also state governments,

educational institutions and businesses. In addition, increased beverage containers in the disposal stream will also increase garbage costs for all the stakeholders.

Finally, there are also costs associated with the impact of beverage container litter on tourism, livestock and wildlife, farm equipment, marine life and freshwater aquatic systems. These costs are exceedingly difficult to quantify, but they must be considered because they represent additional costs that will accrue if Vermont's deposit-refund system is eliminated. In its analysis of an expanded deposit-refund in Massachusetts, DSM estimated total savings to municipalities to be between \$3.8 and \$6.5 million per year, plus \$500,000 in savings due to net reduction in litter collection costs^{xii}. In a report prepared for the State of Rhode Island, DSM estimated reductions in public health costs of \$3.2 million per year, and ecosystem and public health benefits of \$1.3 million per year.^{xiii}

6) The DSM/VSDA analysis omits the costs of yield loss for existing recycling businesses.

It is common knowledge within the recycling industry that material quality in curbside recycling programs is problematic. Putting more containers in the program (by eliminating container deposit-refund systems) requires greater sorting, and all affected secondary material streams end up with reduced quality, value and available markets.

- Plastic collected from curbside recycling has an average yield loss of greater than 25%,^{xiv} while plastic from container deposit-return systems is much cleaner with a yield loss of 15%^{xv} (mostly from glue, caps, and labels).
- Container glass collected in curbside programs can have yield losses of 20%-60%^{xvi} depending on the collection method and processing equipment.
- Paper mills report an average of 15%-20%^{xvii} yield loss from incoming material due to the presence of broken glass and flattened plastic bottles and metal cans.

These losses carry a significant extra cost burden that is ignored in the DSM/VSDA analysis. The result is an overestimate of additional recycling in curbside, and an underestimate of its actual costs.

Conclusion

CRI believes that the analysis undertaken by DSM/VSDA on the potential cost implications and recycling impacts are incorrect and should be disregarded as evidence that supports repeal of the bottle bill.

ⁱ European Commission, Environmental Data Centre on Waste, Germany Packaging Waste Data for 2006 (updated for 2008); <http://ec.europa.eu/environment/waste/packaging/data.htm>. DSD program reports approximately 3.7M tonnes recovered from German households.

ⁱⁱ The estimate is based on data from Stewardship Ontario 2009. Some glass tonnage (~18,000 metric tons) attributed to alcohol glass has been deducted from the reported figure as it is not reflected in the generation value and therefore should not be counted in the recycling rate. This is equal to half the glass which was reported as LCBO glass in the curbside program from audits conducted in 2007 and 2008 (36,500 tonnes). A 20% yield loss from contamination has been deducted, as per average Ontario curbside glass loss according to Ontario's primary glass beneficiator.

ⁱⁱⁱ Stewardship Ontario 2009 "Table 1: Generation and Recovery." Further yield losses are applied: 15% for paper and cardboard as the minimum reported by paper mills that receive Ontario-based paper for recycling.

^{iv} The DSM/VSDA report contains a footnote on page 9 which indicates that "unclaimed deposits are not included in net cost but are estimated at \$2.8 million." In addition, the Vermont Department of Liquor Control shows revenue from "non refunded bottle fund" of \$147,000 in fiscal year 2009. (See 2009 Annual Report of Vermont Department of Liquor Control.)

^v Container Recycling Institute (CRI).

^{vi} Union of British Columbia Municipalities (UBCM).

^{vii} City of Toronto reported that the cost impact of the new refundable deposit on wine and spirits on their existing curbside program was a net savings of \$448,000 in 2007; and 381,000 in 2008 due to a reduction in processing and disposal costs. Source: Amendments to Processing Fees Due to LCBO Deposit Return Program, report to Public Works and Infrastructure Committee from General Manager, Solid Waste Management Services: October 29, 2008

^{viii} *Bottle Bills and Curbside Recycling: Are They Compatible?* James E. McCarthy, Specialist, Environment and Natural Resources Policy Division. January 27, 1993.

^{ix} *Have we got the bottle? Implementing a deposit refund scheme in the UK*, Eunomia Research and Consulting Ltd., September 2010.

^x Source1: Container Recycling Institute (CRI); Source2: Perchards (2005) *Deposit Return Systems for Packaging Applying International Experience to the UK*, Peer Review, Report to Defra, March, 2005: states that deposit return systems seem to achieve a reduction of the order of 33%-38% in total litter.

^{xi} State of Hawaii Department of Health (2008), *The Activities of the deposit Beverage Container Program, Report to the Twenty-Fifth Legislature State of Hawaii 2009*, November 2008.

^{xii} "Analysis of the Impact of an Expanded Bottle Bill on Municipal Refuse and Recycling Costs and Revenues – FINAL LETTER REPORT" prepared by DSM Environmental for the State of Massachusetts, MassDEP, July 21, 2009.

^{xiii} "Analysis of Beverage Container Redemption System Options to Increase Municipal Recycling in Rhode Island," prepared by DSM Environmental for the Rhode Island Resource Recovery Corporation, May 2009.

^{xiv} *Understanding Economic and Environmental Impacts of Single-Stream Collection Systems*, Container Recycling Institute, 2009; Source2: *Plastics News*.

^{xv} NAPCOR.

^{xvi} *Understanding Economic and Environmental Impacts of Single-Stream Collection Systems*, Container Recycling Institute, 2009.

^{xvii} Based on numerous interviews with paper mills; Source2: *The effects of single stream on a paper mill*, W. Sacia and J. Simmons, 2005.