

Impacts of Container Deposit Legislation on New South Wales Recycling and Litter Management Programs

DECEMBER 2000



Prepared by



Centre for
Environmental
Solutions

Executive Summary

C4ES Pty Ltd (C4ES), on behalf of the Beverage Industry Environment Council (BIEC), has conducted an independent assessment of the impacts that the introduction of container deposit legislation (CDL) would have on recycling and litter management programs in NSW.

The idea of putting a deposit on containers that is redeemed when the containers are returned for recycling sounds simple and effective. However, implementing CDL in NSW would actually involve a variety of potential impacts on existing recycling programs, particularly kerbside programs. Given the complexities of modern recycling programs and NSW investment to date in kerbside recycling, a clear understanding of potential risks and trade-offs is necessary.

No cases have been identified where CDL has been introduced where comprehensive kerbside programs are already well established. It is therefore necessary to draw from the lessons learned in existing CDL programs and apply those lessons to NSW conditions. Defining the intended purpose of introducing a CDL program is also critical.

When viewed together, a number of existing programs address the stated aims of CDL – including kerbside recycling programs, public place recycling, special event recycling, the National Packaging Covenant, Industry Waste Reduction Plans, Load Based Licensing and state programs for litter enforcement and stormwater clean-up.

The National Packaging Covenant commits signatories, including the NSW Government, to a self-regulatory approach to recycling used packaging and household paper. This commitment is based on three key issues:

- A collaborative approach between all sectors of the packaging supply chain and all spheres of government;
- Core principles of product stewardship and shared responsibility, including equitable sharing of costs for implementing kerbside recycling programs; and
- Ensuring that the management of packaging and paper throughout its lifecycle and the implementation of collection systems, including kerbside recycling schemes, produces “real and sustainable environmental benefits in a cost effective manner”.

This assessment of CDL has therefore taken these key issues into consideration.

Approach

This submission has drawn on an extensive literature review, stakeholder consultations, personal interviews with over 250 individuals, and cost-benefit assessment of social, economic and environmental impacts across key parameters. Available information has been used to develop five primary models:

- A “base case” emphasising kerbside recycling consistent with the National Packaging Covenant and Industry Waste Reduction Plans (IWRPs) negotiated with the dairy and beer and soft drink industries in NSW, with no CDL;
- Two “South Australian” models, based on the only Australian state to have implemented CDL and representing so-called ‘traditional’ CDL programs; and

- Two “Canadian-style” models based on the Alberta and British Columbia provincial programs that were specifically designed to address many of the perceived disadvantages of traditional CDL programs.

These models were selected to represent different characteristics of traditional and contemporary approaches to implementing CDL. Supporters of CDL often view the Canadian systems as examples of how to successfully implement shared responsibility. They vary from the South Australian approach in terms of containers subject to the deposit and options for redemption.

While broader issues are addressed consistent with the principles of shared responsibility under the National Packaging Covenant, most of this submission will focus on beverage containers, as no CDL programs have been identified that extend beyond beverage containers.

General Findings

Based on research, stakeholder consultations and detailed modelling, the introduction of CDL in NSW may not be in accordance with the Government’s commitment to shared responsibility and sustainable kerbside recycling. Over the past few years, kerbside has evolved to simpler, more effective collection and processing than is seen in existing CDL programs. Implementation of CDL could affect this progress:

- In metropolitan Sydney, Council and Waste Service NSW facilities would have to be modified to redeem containers, creating a parallel, less efficient system than the existing kerbside collection and processing of recyclables.
- Rural NSW recycling programs would require significant grants, handling fees, or increased Council rates in order to redeem CDL containers.
- Increased recovery through collection depots may come at the expense of kerbside recycling programs through lost material sales revenue, lower yields per household, and lost economies of scale. Kerbside recycling contractors could benefit from redeeming deposits and receiving handling fees on the containers that remain in kerbside collections, and could theoretically pass these benefits on to Councils. However, costs to provide kerbside collections would remain fixed despite recovering a smaller volume of recyclables. Program costs may rise, which would ultimately cause Council rates to rise.
- By itself, CDL is unlikely to improve non-residential recycling programs, which represent half of container usage (such as commercial, public place and special event recycling, as well as litter prevention).
- CDL is unlikely to impact on non-beverage container litter, which represents over 90% of the litter stream. It is also doubtful whether CDL would affect littering behaviour in a beneficial way.

Impacts on Recycling Programs and Environmental Impacts

Traditional CDL programs report beverage container recovery rates of 75 – 85% and are therefore viewed by supporters as being environmentally preferable to non-CDL programs. CDL would inevitably result in some additional recovery of containers currently going to landfill. In NSW, opportunity for marginal improvements in container recovery would depend in part on the deposit providing adequate incentive for residents to forego the convenience of kerbside recycling to save containers and return them to a collection depot.

The extent to which people would go to collection depots for a refund rather than recycling kerbside is a key factor in evaluating potential impacts of CDL. In South Australia, where CDL has long enjoyed strong public support, 37% of residents recycle solely through kerbside, while an equal amount recycle through a combination of CDL and kerbside. Only 26% of South Australian residents surveyed recycled solely through collection depots. A number of these did not have access to kerbside recycling.

South Australian residents that take containers to depots do so infrequently. Of residents surveyed, 39% never take containers to collection depots, while 19% do so when convenient, 14% do so every 2 to 3 months and 11% redeem containers monthly.

An estimated 90-95% of NSW residents have access to kerbside recycling. Given the availability and convenience of kerbside recycling, NSW residents may be less likely to devote the time and effort to save containers and return them for a refund, even at an assumed deposit amount of 20c per container for return to depots and 30c for return to retail.

In South Australia, 82% of residents surveyed said that if kerbside recycling and collection depots were equally convenient, they would recycle kerbside. This finding is especially significant considering that 93% of metropolitan Adelaide residents live within 5 kms of a collection depot.

Impact Modelling

The five models used to evaluate CDL include:

- *A1* – Kerbside base case without CDL;
- *B1* – South Australian-style depot recovery and 20c deposit on ‘traditional’ containers, ie, primarily beer and soft drink;
- *B2* – South Australian-style depot recovery with 20c deposit on returns to depot and up to 10% return to retail deposit of 30c on ‘traditional’ containers. Return to retail is assisted by use of Reverse Vending Machines (RVMs);
- *C1* – Alberta-style depot recovery with 20c deposit on an ‘expanded’ scope of containers to address virtually all beverage containers except those for plain milk; and
- *C2* – British Columbia-style depot recovery with 20c deposit on returns to depot and up to 10% retail return 30c deposit on ‘expanded’ containers. Retail return assisted by RVMs

The following tables show monetised results of annualised benefits and costs (excluding unredeemed deposits and a variety of industry implementation costs) assuming a 20c deposit for returns to collection depots and a 30c deposit for returns to retail establishments.

Summary Benefits	A1	B1	B2	C1	C2
Deposits Refunded at Depots or Retail	\$0	\$329,458,000	\$346,648,000	\$295,174,000	\$259,403,000
Deposits Refunded to Contractor/Council	\$0	\$25,390,000	\$37,727,000	\$0	\$44,672,000
Kerbside Material Value (All Materials)	\$33,248,000	\$19,833,000	\$19,833,000	\$15,118,000	\$19,328,000
Depot & Retail Material Value (All Materials)	\$529,000	\$22,219,000	\$22,219,000	\$20,555,000	\$15,926,000
Net Avoided Energy Use Value	\$28,880,000	\$39,845,000	\$39,845,000	\$31,994,000	\$32,238,000
Avoided External Costs of Landfill	\$3,801,000	\$5,691,000	\$5,691,000	\$4,247,000	\$3,747,000
Avoided Landfill Disposal Costs	\$9,851,000	\$14,749,000	\$14,749,000	\$11,007,000	\$9,710,000
Subtotal	\$76,309,000	\$457,185,000	\$486,712,000	\$378,095,000	\$385,024,000

Summary Costs	A1	B1	B2	C1	C2
Deposits Charged	\$0	-\$444,137,000	-\$465,585,000	-\$469,836,000	-\$491,284,000
Minimum Council Metropolitan Establishment Costs (annualised)	\$0	-\$1,360,000	-\$1,360,000	-\$1,360,000	-\$1,360,000
Minimum Council Metropolitan Operational Costs	\$0	-\$5,100,000	-\$5,100,000	-\$5,100,000	-\$5,100,000
Minimum Rural Establishment Costs (annualised)	\$0	-\$1,500,000	-\$1,500,000	-\$1,500,000	-\$1,500,000
Minimum Rural Operational Costs	\$0	-\$6,000,000	-\$6,000,000	-\$6,000,000	-\$6,000,000
Rural Transport Costs (PET & Glass Only)	-\$793,000	-\$1,296,000	-\$1,296,000	-\$822,000	-\$846,000
Kerbside Collection Cost (All Materials)	-\$42,262,000	-\$42,262,000	-\$42,262,000	-\$42,262,000	-\$42,262,000
Metropolitan Retail Reverse Vending Machines	\$0	\$0	-\$10,959,000	\$0	-\$10,959,000
Rural Retail Reverse Vending Machines	\$0	\$0	-\$8,017,000	\$0	-\$8,017,000
Subtotal	-\$43,055,000	-\$501,655,000	-\$542,079,000	-\$526,880,000	-\$567,328,000

	A1	B1	B2	C1	C2
NET BENEFIT/(COST)	\$33,254,000	(\$44,470,000)	(\$55,367,000)	(\$148,785,000)	(\$182,304,000)

Unredeemed deposits are difficult to allocate accurately as benefits given a wide variety of possible options. It can also be argued that unredeemed deposits are actually not a benefit, and are in fact a transfer payment.

The following table assigns all unredeemed deposits as a net benefit, without allocating them to any particular party, such as the Government, industry or Councils, under the same assumptions shown previously.

	A1	B1	B2	C1	C2
Net Benefit/(Cost) Without Allocating Unredeemed Deposits	\$33,254,000	(\$44,470,000)	(\$55,367,000)	(\$148,785,000)	(\$182,304,000)
Unredeemed Deposits	\$0	\$89,289,000	\$81,210,000	\$174,662,000	\$187,209,000
Net Benefit Allocating all Unredeemed Deposits as Benefits	\$33,254,000	\$44,819,000	\$25,843,000	\$25,877,000	\$4,905,000
Benefit/(Cost) Compared to Kerbside Base Case	N/A	\$11,565,000	(\$7,411,000)	(\$7,377,000)	(\$28,349,000)

Under these assumptions, a traditional CDL system, with an optimum 20c deposit and assuming that depot recovery rates similar to South Australia's could be achieved, would provide a net benefit of \$11.6 million compared to the kerbside base case. All other scenarios would represent a net cost to the NSW community, even under optimal scenarios.

The above assumptions do not factor in additional unquantified costs such as:

- Education efforts to help consumers understand and participate actively;
- Industry implementation costs such as artwork and new labelling;
- Impacts on employment and tax revenue in the beverage and retail sectors that may result from price increases;
- Full costs to track container and deposit flows to ensure proper payments and minimise illegal redemption; or
- The possibility of lower deposit amount, which would similarly affect the value of unredeemed deposits.

Although jobs would be created at collection depots, these may come at the expense of system inefficiencies compared to current kerbside recycling and keep investment from occurring in other areas. This employment therefore involves benefits transfer rather than additional economic development, and cannot be considered to be a benefit.

Costs and Benefits of Material Diversion

Through the modelling of container and material flows, each model was assessed against the base case of kerbside recycling without CDL. All figures quoted are on an annualised basis.

Achieving depot recovery rates similar to South Australia's would result in an additional 84,000 tonnes (24.3%) diversion of residential recyclables at a net cost of \$76.4 to \$87.3 million. Increased recovery at collection depots would result in 59% lower recovery from kerbside for aluminium and 45% lower kerbside recovery for glass and PET. Kerbside programs would lose \$13.4 million per annum in sales of recovered materials.

Achieving recovery rates similar to Alberta's would result in an additional 19,600 tonnes (6.4%) diversion of residential recyclables at a net cost of \$179.2 million. Increased recovery at collection depots would result in 61% lower recovery from kerbside for aluminium and 51% to 52% lower kerbside recovery for glass and PET.

Kerbside programs would lose \$18.1 million per annum in sales of recovered materials. Avoided external costs of landfilling and avoided disposal costs would provide \$1.6 million benefit to the community. Value to industry of avoided energy usage is \$3.1 million.

A British Columbia-style system would cover a broader range of containers and involve 10% of non-kerbside returns being redeemed through retailers. This program would focus on recycling through collection depots and retail rather than kerbside, which would result in a net reduction in total material recycled of 180 tonnes compared to kerbside recycling at a net cost of \$208.0 million.

A British Columbia-style system would cause the greatest harm to kerbside programs by diverting most recyclables, thereby increasing collection and processing costs for the remaining kerbside materials and/or causing Local Governments to drop kerbside programs. Increased recovery at collection depots would result in 123,100 tonnes of material being diverted from kerbside recycling programs. 29% lower recovery from kerbside for aluminium and 20% to 18% lower kerbside recovery for glass and PET would also result.

Kerbside programs would lose \$13.9 million per annum in sales of recovered materials. The NSW community would incur an additional \$194,000 in external costs of landfilling and disposal compared to current kerbside recycling. Value to industry of avoided energy usage under a British Columbia-style program is \$3.4 million.

Establishing a Network of Collection Depots

If the NSW Government introduced a deposit on containers, particularly an amount high enough to ensure high return rates, there may then be an inherent obligation to ensure convenient opportunities for consumers to obtain refunds. To serve the same population base per depot as South Australia's would require the establishment of 114 collection depots in metropolitan Sydney at an estimated establishment cost of at least \$34.2 million and operations and maintenance costs of \$17.1 million per annum.

Given cost, siting difficulties and environmental impacts of such a system, an alternative approach would be to modify the 34 existing Council and Waste Service NSW facilities to add container redemption at a minimum establishment cost of \$6.8 million and operations and maintenance costs of \$5.1 million per annum.

To provide a comparable level of service for rural NSW residents would require a minimum of 493 collection depots or retail drop-off facilities at an establishment cost of \$123 million. However, given likely material volumes and container flows, only 30 to 60 rural depots would be economically viable without significant handling fees and/or subsidisation.

If rural Council waste facilities were modified, 66% of the rural population would live within 20 kms of the 92 collection depots that would be available.

While Council facilities are managed predominantly by private contractors, modifications to facilities and ongoing operations costs are likely to be passed on to consumers via increased rates. Such a shift may defeat the purpose of CDL programs in shifting costs for recycling directly to the beverage industry and beverage consumers.

Program Effectiveness and Material Quality

CDL can produce cleaner glass and PET bottle separation than kerbside collections processed through some material recovery facilities (MRFs). Supporters of CDL also contend that recovering the majority of glass through depots reduces contamination of newsprint and cardboard by glass 'fines', thereby improving recovery of non-CDL items. However, these 'quality' issues have no impacts on demand or market price for recovered materials compared to well run kerbside programs.

If CDL's impact was greater than collection and processing systems, it could be expected that South Australia (the only state with CDL in Australia) would lead the nation in effectiveness indicators such as program yield, total diversion and demand for recovered materials. In fact, South Australia records some of the lowest values for all these indicators. In comparison, NSW and Victoria consistently perform better.

Collection and processing systems used to recover aluminium, glass, PET and newsprint have a more significant impact on the quality of recovered materials than the presence of CDL. Hand sorting and multiple handling under CDL also increases costs compared to kerbside programs.

Based on discussions with key national stakeholders, implementing CDL in NSW would have no effect on end use demand or material value for materials recovered through CDL. None of the end users consulted would provide any price premium under a CDL program in NSW because they view CDL material as having little marginal benefit compared to most existing kerbside systems.

Further Research Needed

Given the short time available, the complexities of issues surrounding CDL, and the availability of certain information, there are several issues that warrant further examination. These include:

- Potential impacts of handling fees and material subsidisation on the viability of different kerbside recycling programs;
- Impact on beverage sales, turnover and employment in the beverage and retail industries that may result from the introduction of deposits, particularly deposit amounts that could vary by return option, container size or contents;
- Effects of the issues listed above on container packaging mix, which could in turn impact potential recovery rates, revenues to kerbside programs and other financial flows;
- Taxation and competition policy ramifications arising from potential effects of CDL on interstate and international trade;
- Potential effectiveness of CDL should be evaluated in light of existing programs for recycling and litter management, and their potential impacts if effectively implemented and enforced. Similarly, threats and/or benefits to these systems if CDL were implemented should also be considered;
- Further research with the NSW community is needed to determine the extent to which residents would be motivated by the deposit to return containers either to depots or to retail;
- Some implementation and cost details of the Canadian systems examined that might affect applicability of these models to Australian conditions; and
- Potential for more comprehensive programs such as user-pays pricing of garbage collection, garden organics collection and composting, alternative collection systems and improved public education programs to produce more significant results in a more cost-effective manner.