



Reform for a Sustainable Future – The Time is Now

California's Beverage Container Program

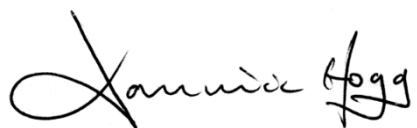
Dr Dominic Hogg

Sarah Edwards

Orla Woods

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Approved by

A handwritten signature in black ink, appearing to read 'Dominic Hogg', with a stylized, cursive script.

Dominic Hogg
(Project Director)

Eunomia Research & Consulting Inc
33 Nassau Ave
New York City
New York, 11222

Tel: +1 646 256 6792

Web: www.eunomia-inc.com

United States

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Version Control Table

Version	Date	Author	Description
V1	11/14/18	Orla Woods Sarah Edwards Dominic Hogg	First draft for review
V2	02/24/19	Sarah Edwards	V2 incorporating consultation feedback
V3	09/25/19	Sydnee Grushack	V3 for release to legislators, including foreword

Foreword

California has long been a leader in environmental policy and programs in North America. Its Deposit Return Program (DRP), established in 1986, is the largest in North America and second largest in the world. Over 33 billion beverages are sold into California every year and approximately 19 billion are collected for recycling. 88%¹ of the 19 billion are redeemed through the DRP, whereby the consumer is able to collect their deposit. 12% are collected through curbside and drop off programs where the deposit is kept by the materials recovery facility, that processes the curbside material or program operator.

However, the inability of the California Beverage Container Recycling & Litter Reduction Act (The Act)² to ensure it is as easy to return a container as it is to purchase a beverage, such that the consumer can recoup their nickel is leading to the program failing to achieve an 80% return rate, in fact the redemption rate is just 66%, which, in present standards, is below what a well designed, operated, and regulated DRP can achieve³.

This report, produced by Eunomia Research & Consulting (Eunomia) originally produced at the end of 2018, provides an independent, objective review of the contributing factors that have led to a deteriorating return rate and a significant reduction in return points. It also assesses whether these factors could be addressed through amendments to the current legislation, or, if there is a need for full scale program reform.

The conclusions made, back at the end of 2018, and which still hold true are:

- The program fails to provide sufficient redemption locations which results in consumers forfeiting their deposit;
- The program disproportionately subsidizes curbside and drop-off programs. In 2017 these programs received in excess of \$172m from the program for receiving just 12% of returned containers whilst recycling centers were paid just over \$151m for receiving 88% of returned containers.
- Convenience zones fail to provide convenience for consumers and CalRecycle has not ensured retailers comply with their legal obligations under the Act.

¹ CRI, California's CRV Beverage Container Recycling Program Quantifying Payments to Curbside and Drop-off Programs (2017)

² <https://www2.calrecycle.ca.gov/Publications/Details/1478>

³ Norway, is the highest performing DRP and achieved 95% return rates based on a producer managed and financed system.

In summary, due to the overly prescriptive nature of The Act, passing the number of amendments (detailed in scenario 3) necessary to achieve a sustainable high performing system that can be flexible to market challenges and will allow for consumers to easily get their deposit back, will at best be lengthy, resource-intensive, and costly but more likely be politically impossible. If history is anything to go by, stakeholder support for the suite of changes necessary to provide long term performance and financial stability under the current legislation is very unlikely.

Scenario 4, in the report, sets out the requirements of legislative reform necessary to deliver the key components of a modern DRP. These key components, along with the system framework principals, set out below, are derived from Eunomia's experience of designing and reviewing DRP systems in over 15 different jurisdictions across the world.

Components of a Modern DRP

- **Performance:** Set and achieve a target of 90% redemption such that the consumer can recover their deposit and the producers can access a supply of recycled material sufficient in quality to enable them to meet the 50% minimum recycled content requirements under AB 792.
- **Ease of Return:** Create redemption infrastructure to allow consumers to reclaim their whole deposit and a sufficient number of locations to ensure that it is as easy to return an empty container as it is to purchase a beverage;
- **Producer Responsibility:** Enable producers, distributors, and retailers to share responsibility with consumers and the State for preventing materials entering the environment and achieving high levels of redemption and recycling. Evidence from high performing programs from across the world demonstrates that when producers are given the responsibility for the DRP they can put in place an operationally and financially efficient system that will: allow consumers easy access to redemption points; deliver against redemption targets; affords them control of recycled material necessary to meet minimum recycled content obligations; and ensures system integrity¹ through measures to prevent free riders and fraud.

System Framework Principals

- 1) **Governance:** Legislation must be enabling, and not overly prescriptive on process, with the focus on outcomes. Role of government should be:
 - a. Setting and enforcing a redemption and convenience target;
 - b. Establishing the need for continuous improvement by putting in place mechanisms to adjust the level of deposit if redemption and recycling targets are not being achieved for an agreed-upon number of consecutive years and ensuring that that consumers can conveniently redeem containers; and
 - c. Establishing the responsibilities of government to include audit, oversight and enforcement.
- 2) **Management:** Those parties responsible for the supply and, in some cases, sale of beverages (essentially producers, distributors and retailers) are given the shared responsibility for meeting the requirements of the legislation through a collaborative administrative approach and free market driven operational delivery, ensuring cost efficiency and compliance. This includes:
 - a. Putting in place a non-profit producer responsibility organization to oversee the system;
 - b. Enabling and commissioning of services that:
 - i. Deliver return infrastructure and options to ensure consumers can redeem as easily as they can consume;
 - ii. Offer technology driven solutions that drive efficiencies in respect to transport and provide transparent and accurate recording of units sold and containers returned for billing and fraud mitigation;
 - iii. Optimize costs through a market-driven approach to infrastructure and fees to producers such that containers that non-recyclable containers are eliminated.
- 3) **Delivery:** Organizations appointed by the producer responsibly organization are given the responsibility for operational delivery and required to report through performance management indicators to demonstrate achievement of, and compliance with program financial, legal, environmental and social goals.

Since this report was written, there has been a further decline in redemption locations, resulting in Californian consumers receiving just 2.35c of the 5c they pay back⁴. Options such as retail return, which is mandated for within the current legislation, and which is proven to provide the ease of return necessary to achieve redemption rates in excess of 90%, has not been enforced. In addition, convenience zones, aimed at providing a geographic coverage of return points have failed, in part due to municipal zoning preventing waste and recycling type activities.

Over the last 12 months there has also been increasing public demand and legislative drive to create a circular economy, drive markets for recycled material, and require producers to play their role in managing and mitigating the impact of their packaging at the end of life. Progressive bills such as AB792:⁵ have provided a further trigger for a full-scale reform of the DRP, one that will achieve 90% redemption, and pass the ownership of returned containers to the beverage industry such that they can meet the minimum recycled content obligations set out in AB792.

California's current deposit Act is overly prescriptive, inflexible and outdated. The best systems in the world achieve over 90% redemption rates, are controlled by producers through a non profit producer responsibility organization and have return points at locations to enable consumers to return and collect their deposit as easily as they can purchase a beverage.

A reformed DRP in California will give producers the operational and financial control to enable them to access recycled material necessary to meet minimum requirement targets and obligation, and also drive out beverage packaging that cannot be recycled. If the California program achieved a 90% redemption and recycling rate for aluminum and PET in 2017, an additional 55,654 tons of recyclable material would have been produced, generating revenues of in excess of \$23m and providing a supply of recycled PET necessary for manufacturers to meet their minimum recycled content goals.



Sarah Edwards

Director, Eunomia North America

⁴Half a Nickle. How California Consumers Get Deposits Ripped Off On Every Bottle Deposit They Pay, Liza Tucker, Consumer Watchdog <https://consumerwatchdog.org/sites/default/files/2019-02/Half%20a%20Nickle.pdf>

⁵ AB792: Recycling: Plastics Containers: Minimum Recycled Content and Labeling, Assemblymember Ting, Minimum Recycled Content Bill

About the Eunomia Research & Consulting: Eunomia is an independent environmental consultancy that has been operating for 18 years. It has advised governments; states, and provinces on progressive policy aimed at mitigating the environmental, social and economic impacts of waste, and creating a circular economy. Eunomia has designed and reviewed deposits systems across the world including most recently in Hong Kong, Scotland, England, Turkey and Czech Republic. Its recent North America reports include *“Better Together”* which demonstrates the system benefits of curbside and deposit systems operating alongside each other, and an economic evaluation of changes to the New York bottle bill. Eunomia employ’s over 100 consultants across 5 cities worldwide and has advised the European Commission on both its Circular Economy Strategy and Single Use Plastics Directive.

Executive Summary

Deposit Return Programs (DRP) are internationally recognized as a mechanism for capturing high levels, in excess of 90%, of used beverage containers for recycling. California's Beverage Container Recycling Program (the program) was introduced by the California Beverage Container Recycling & Litter Reduction Act (The Act) in 1986.⁶ The program, like other Bottle Bills, was introduced to reduce container-based littering and increase recycling. With increasing understanding of the impact of plastic containers in our marine environment and with growing concerns about the effectiveness of single-stream curbside programs to deliver high quality material, the aims of the Act remain as relevant today as when it was introduced in 1986.

The Californian program has, in the past, achieved impressive results, but there is now a common view that reform is needed if the program is to be stable and sustainable over the long-term. The closure of recycling centers has denied consumers the opportunity to redeem their deposits – the “California Redemption Value” (CRV). This means the success of the program, measured by its recycling rate, has declined.

§14501 of the Act states that it is the intent of the legislature to:

“encourage increased, and more convenient, beverage container redemption opportunities for all consumers.

create and maintain a marketplace where it is profitable to establish sufficient recycling centers and locations to provide consumers with convenient recycling opportunities through the establishment of minimum refund values and Processing Fees and, through the proper application of these elements, to enhance the profitability of recycling centers, recycling locations, and other beverage container recycling programs.

ensure the responsibility to provide convenient, efficient, and economical redemption opportunities rests jointly with manufacturers, distributors, dealers, recyclers, processors, and the Department of Conservation.”

§1450 (C) also states that the division establishes a beverage container recycling goal of 80%. While 80% was an ambitious target when first introduced, today due to the greater recognition of the environmental impact of single use plastics, specifically on the marine environment, a 90% redemption target is most common. A 90% redemption target for California would be in line with leading jurisdictions, including the European Union.⁷

⁶ <https://www2.calrecycle.ca.gov/Publications/Details/1478>

⁷ http://europa.eu/rapid/press-release_MEMO-18-3909_en.htm

With greater knowledge of how land-based litter eventually impacts our marine environments and the need to ensure California's deposit program has the ability to continue to deliver program goals in potentially challenging market conditions, in this report Eunomia Research & Consulting (Eunomia) first critiques the California system, then outlines options for reform under four scenarios, using the criteria set out below.

Criteria for Review

- **High Performance:** Reliably exceeding the 80% target and preferably deliver 90%+ redemption for recycling;
- **Convenience:** Ensuring it is as easy to redeem an empty container as it is to purchase a beverage;
- **Financial stability:** Providing for program's financial sustainability and delivering value for money;
- **Flexibility:** Allowing for the system operator to easily and quickly make changes to the system to ensure targets are met; and
- **Fairness and accountability:** Both in terms of who pays for the system and in payments to those parties providing the redemption infrastructure.

Reform Scenarios

- 1) Scenario 1 - Optimizing the current program: Reforms that could be implemented without any change to The Act;
- 2) Scenario 2 - Changes broadly within the confines of the current program, involving minor amendments to The Act and which do not fundamentally change the design of the program;
- 3) Scenario 3 - More substantial amendments to The Act intended to strengthen the program's structural weaknesses and which change the roles and responsibilities of the different stakeholders; and
- 4) Scenario 4 - Redesign: A fresh policy approach to meet, and exceed, the current program goals so as to contribute to a circular economy and design out non recyclable packaging including:
 - a. 90% redemption target such as to return high value material to the market and maximize recycling,
 - b. Geographical coverage of sustainable redemption points such that it is as easy for consumers to reclaim their deposit as it is to purchase a beverage; and
 - c. Producer responsibility such that manufacturers, distributors, and retailers, share responsibility with consumers and the State for high levels of return and recycling and so producers have the operational and financial control to ensure redemption and recycling targets are met cost effectively.

E.1.1 Program Review

Our assessment of the current program is summarized in the following sections.

E.1.1.1 Performance

The program is not consistently achieving its 80% recycling target. In 2017, 76% of containers were collected for recycling. 88% of the 76% were redeemed through recycling centers and the deposit returned to the consumer, 12% were collected through curbside and drop-off programs and the nickel was retained by the operator of the material recovery facility (MRF).

Recycling center closures and the declining value of the nickel, due to inflation, are the primary reasons for falling performance. The convenience zone concept which aims to provide the number of return necessary to enable consumers to redeem their containers and collected their deposit has never been able to deliver on this objective. This is resulting in more than 1.7 million additional containers being littered or landfilled every day.⁸

If the deposit is high enough and return infrastructure convenient enough, consumers will return their containers to the DRP directly to claim their CRV refund. Instead, curbside collections and drop-off programs have partially compensated for the program's failings in California, artificially boosting the recycling rate and diverting funds from the DRP. Whilst curbside and deposit programs collect some beverage containers, they do not provide the quality of material necessary to feed back into the closed loop system where new bottles can be made from old, according to National Association of PET Container resources (NAPCOR) only 6% of recycled PET is dedicated to bottle production⁹.

E.1.1.2 Convenience

Recycling Center Closures

Recycling centers are closing because on an ineffectual funding mechanism:

- 1) **80% of their revenue is derived from scrap value**, which they have no control over (funding is shown in Figure E 1). The alarm bells regarding the misallocation of material price risk should have sounded and triggered a response long ago, yet recycling centers continue to shoulder this risk. The California system, which places material value risk with the recycling centers, is very different than most other deposit programs. Usually, the producer or the system operator owns the material and, therefore, takes the risk for its sale. Redemption locations in these systems

⁸ Californians Against Waste: <https://www.cawrecycles.org/sb-452-glazer>

⁹ August 29, 2019. NAPCOR: US lacks recycled PET to meet consumer brands' pledges, Jim Johnson, Plastic News

receive a payment that is designed to cover costs, plus a reasonable financial return. Selling material in bulk, as the system operator would, will deliver higher revenues and provide greater protection from market fluctuations.

- 2) **The mechanism for determining Processing Payments is ineffective.** Processing Payments are currently based on retrospective cost surveys of a failing system, where costs have been cut to a minimum. Payments are equal to an average of the costs gathered through this survey process. This process causes those recycling centers that have higher than average costs to be unable to cover their costs, making them significantly more likely to close. Consequently, the survey results are not reflective of the infrastructure required to ensure convenient location points at which consumers can claim the CRV. As recycling centers drive down costs to meet the constraints imposed by the Processing Payments and higher-cost centers close, subsequent survey reports show a decline in average costs, so payments will be further reduced – forcing a race to the bottom. The fact that the Processing Payments have proved insufficient for hundreds of recycling centers indicates that the methodology prescribed in The Act is no longer appropriate. A change in the payment methodology, which recognizes different operating costs, will better justify the \$2 million spent on the biennial cost survey. Although the survey gathers good data, how the data is used to calculate the Processing Payment currently has a detrimental impact on the viability of recycling centers and thus, the program performance.

Processing payments are material based, so aluminum cans attract no processing payment, because the material value offsets the calculated processing cost. Because recycling centers handle proportionally more aluminum cans than curbside programs, the overall Processing Payment per unit handled is less than that provided to curbside and drop-off programs, as shown in Figure E 2.

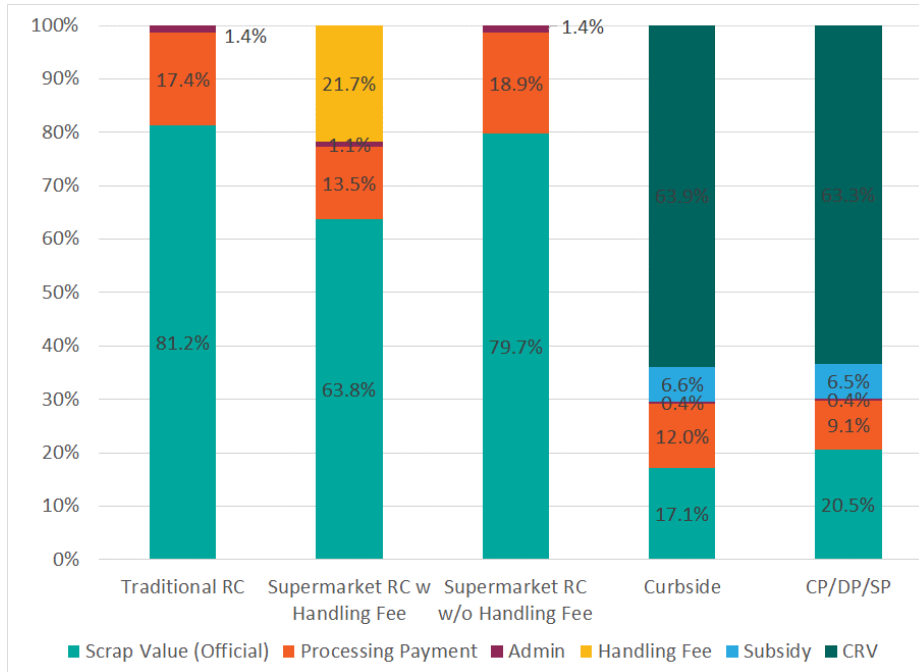
- 3) Material price risk is exacerbated by the time lag between recycling centers losing revenue and increases in Processing Payments. The mechanism for changing Processing Payments to compensate for fluctuating material markets or other cost pressures (such as minimum wage increases) is too slow.
- 4) Reasonable Financial Return: The reasonable financial return calculation has additional floors:¹⁰
- a. It fluctuates, creating even further uncertainty for operators;
 - b. It only applies to Processing Payments, not handling fees; and
 - c. It is calculated on a recycling center's operating costs minus revenue from scrap material, not on all operating costs.

It could therefore be argued that it does not represent a reasonable financial return.

¹⁰ Calculated according to California Code of Regulations §2975

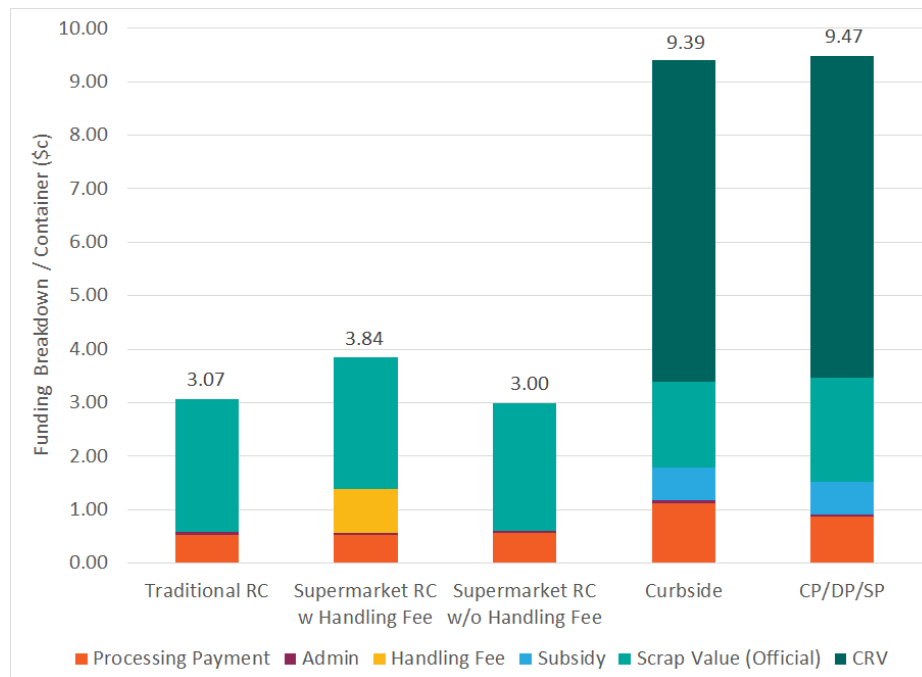
- 5) Reconciliation: There is no reconciliation at the end of the year to compensate for any difference in assumed costs and actuals that might have occurred from unexpected costs incurred or declines in revenue.

E 1: Funding of Container Redemption



Source: Eunomia calculation using CalRecycle 2017 Fact Sheet. CP/DP/SP = Curbside Program, Drop-off Program, Supplementary Program

E 2: Funding Breakdown by Redemption Route



Source: Eunomia calculation using CalRecycle 2017 Fact Sheet. CP/DP/SP = Curbside Program, Drop-off Program, Supplementary Program

Reducing Opportunity to Claim CRV

Where recycling centers are closing, the program is not providing alternatives for consumers to claim their CRV refund. Only 36%¹¹ of Convenience Zones (CZ) are currently served, 34% have exemptions¹² and 32% are unserved, meaning retailers are required to take back containers or pay a fee. There is no information on the CalRecycle website to inform consumers which retailers are required to take back. The likely lack of public awareness of retailers' responsibility to redeem in unserved zones - CalRecycle spent none of its allocated program education budget in 2017 - alongside minimal budget for enforcement to ensure retailers are complying with their legal requirements under the Act, affects consumers' ability to claim their deposit. This has led Californian consumers receiving just 2.35c of the 5c they pay back.

E.1.1.3 Financial Stability

Financial instability can be caused by both how the program is funded and what it funds.

¹¹ Correspondence from CalRecycle received on 10/23/18

¹² 14571.8, of The Act sets out exemption requirements which includes the ability for consumers to place containers in a curbside program. This however does not allow them to claim the CRV.

Sub-Optimal Funding Structure

The system relies disproportionately on unclaimed deposits which are a consumer cost. In 2017, 93% of the revenue into the program was from consumers unredeemed deposits¹³ with only 6% coming from the beverage industry that is responsible for producing the container. In monetary terms manufacturers contributed \$16.6m to the program versus \$262.7m from unredeemed deposits.

All DRPs rely to a certain extent on unredeemed deposits but not to the extent California's does. Most systems are funding through unredeemed deposits, manufacture fees and material scrap value. This is, to an extent, the same in California however the scrap value is outside of program boundaries with recyclers securing their own contracts for sale of material.

When material revenue is excluded from Norway's system which achieves a 95% return rate and is operated by an industry appointed non-profit, Infinitum, 65% of income is derived from unclaimed depots with producers picking up 23% of the costs through admin fees and further income derived when new products register on the market.

The impact of such a heavy reliance on unclaimed deposits is that when return rates are high there are less unclaimed deposits to cover costs. In 2007 a combination of number of factors including a high return rate and low material values forced the fund into a deficit which resulted in reduced payments to recycling centers leading to significant closures. Whereas in other systems, manufacturers pick up any shortfall in funding, in California, such as the legislation is written, Processing Fees from producers actually decline as more material is recycled. It makes no economic sense to reduce payments from producers when revenue from unredeemed deposits has also fallen.

Inappropriate Use of Funds

E 3 shows both program revenue and expenditure. Anomalies with the California program that are not present, to our knowledge, in any other system include:

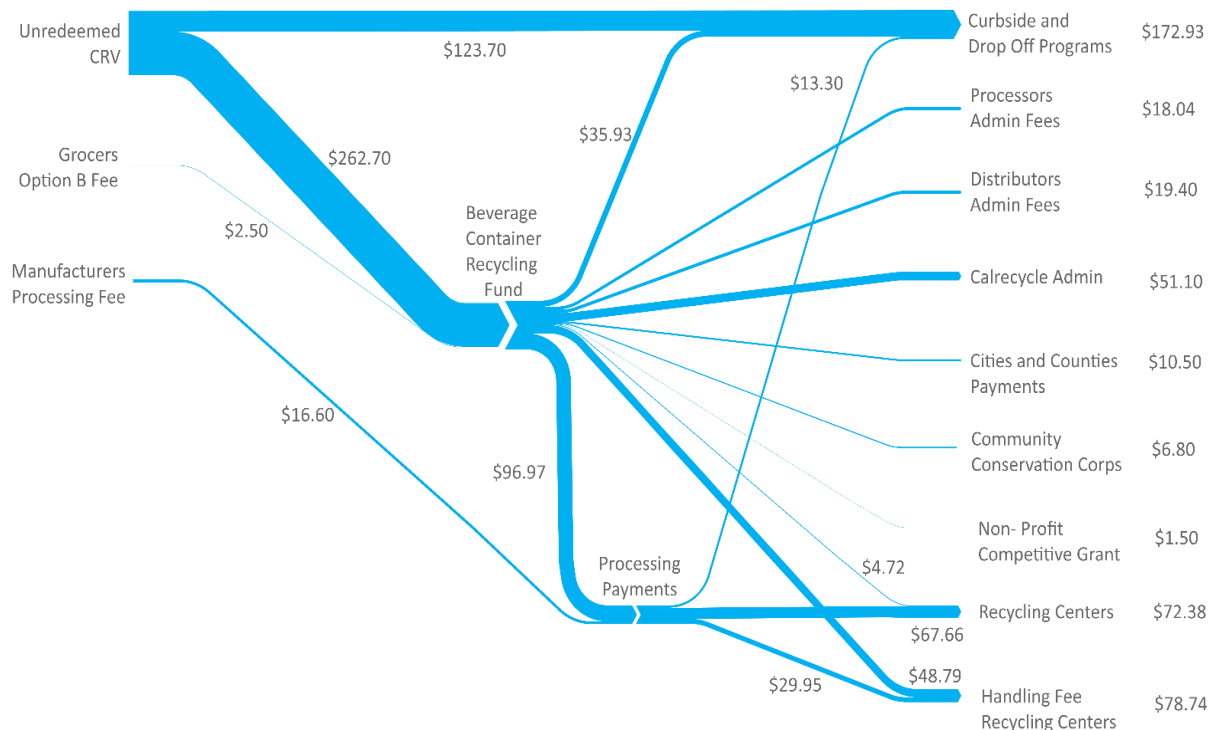
- Payments provided to supplementary programs without first ascertaining their cost effectiveness and benefit to the system.
- Distributors paid a set fee for fulfilling their legal responsibilities, that is not based on any assessment of costs.
- Diverts significantly more funding to curbside and drop-off sites compared to the primary redemption route, recycling centers, where consumers can claim their CRV refund:

¹³ Excluding \$0.4m of interest on loans

- Curbside and drop-off programs were paid \$172.93m in 2017 for receiving 12% of returned containers, or 9% of containers sold. These programs receive Processing Payments; Admin Fees; the full CRV (which would be returned to the consumer if redeemed through a recycling center); and supplementary payments.
- Recycling centers were paid \$151.13m for receiving 88% of returned containers.

Redirecting payments from curbside programs to recycling centers would significantly help the financial viability of recycling centers however this is not possible without changes to the Act which is likely to receive significant opposition from the waste management sector.

E 3: Program Revenue and Expenditure (\$m)



Source: Eunomia calculation based on 2017 Fact Sheet¹⁴

E.1.1.4 Flexibility

The Act does not give CalRecycle any flexibility to prevent or address potential funding gaps because both revenue streams and expenditures are set in the legislation. The only measure

¹⁴ Income into the program on the left had side of the Sankey diagram excludes interest on fund

is through proportional reductions that, if triggered again, would lead to more recycling center closures.

It is a cumbersome legislative process to make even minor changes, with legislators facing political pressure from all sides to support or oppose amendments; decisions that, in other systems, can be easily made by the private organizations responsible for meeting the performance targets. Almost all changes that are necessary to make the program more sustainable in the long term require an amendment to The Act.

E.1.1.5 Fairness and Accountability

If we ignore the CRVs refunded to consumers, the distribution of funds is as follows:

- Recycling centers receive 35.03% of total program funding (issued through CalRecycle excluding material revenue) for handling 88% of return the volume, which equates to \$0.009 per container redeemed through recycling centers;
- Curbside and drop-off programs receive 40.09% of funding (issued through CalRecycle excluding material revenue) for handling 12% of return volume, which equates to an average of \$0.072 per container redeemed through curbside/drop-off centers (excluding revenue from material sale);
- Distributors receive 4.5% of funds which equates to \$0.0011 per container redeemed; and
- Processors receive 4.18% of funds, the equivalent of \$0.0010 per container redeemed.¹⁵

The most noticeable point from the above is the relative lack of funding to support infrastructure that allows consumers to claim the CRV refund, i.e. recycling centers. The current funding mechanism is neither fair to the consumer nor recycling centers, as they are left exposed to fluctuating material values and uncertain Processing Payments. Businesses require a certain degree of certainty in order to invest, this is not possible under the current funding structures therefore there is continuous underinvestment which impacts on user experience.

Furthermore, in the event of insufficient funds, in cases caused as a result of high redemption rates, the proportional reductions clause is triggered and this has a greater impact on recycling centers, as curbside and drop-off programs have other, more stable sources of revenue.

¹⁵ All calculated made using 2017 Factsheet

The Californian system denies manufacturers the opportunity to control how their product is managed at the end of its life, impeding their ability to provide product stewardship. It also prevents manufacturers holding CalRecycle to account for not meeting the target.

E.1.1.6 Measures for Reform

Scenarios 1 – 3, detailed above seek to work with the current Act, while Scenario 4 proposes a fresh approach for redesign based on repealing the current act.

Section 4.0 of the report details the changes to The Act, possible under Scenarios 1 and 2, and considers the effectiveness of each recommendation against the five criteria for review, scoring each recommendation using a red-amber-green rating. Red represents no improvement to the program, amber some improvement, and green that the improvement substantially benefits the program.

Scenarios 1 and 2 are effectively ‘Band-Aid’ solutions: they may provide some short-term benefits but will not deliver the wholesale improvements needed for long-term performance and financial stability. As such, the program effectively has two options:

- 1) Scenario 3: Attempt to meet the program goals through ongoing significant Bill amendments;
- 2) Scenario 4: Assign responsibility for system design, financing and achieving redemption and recycling targets to the beverage manufacturing and retail industry.

Table E4 details the many Bill amendments necessary if Scenario 3 was pursued. Act amendments would first need to stabilize payments to recycling infrastructure. This would be achieved through changes to the Handling Fee and Process Payment calculations, aiming to reduce reliance on scrap values and provide more payment certainty. Further amendments would then be required to stabilize the fund itself. This would be achieved by:

- Ensuring all unredeemed deposits are used to support payments to recycling points where consumers can collect their deposits, this includes retailers, who are currently mandated to provide points of return. These payments must supersede payments to curbside and drop-off programs; and
- Revising the processing fee to make certain manufacturers cover the cost of the program rather than consumers (through unredeemed deposits) and recycling points (through cut backs and closure).

Passing all the necessary amendments detailed above for Scenario 3 will, at best, be lengthy, resource-intensive and costly but more likely be impossible. If history is anything to go by, stakeholder support for the suite of changes necessary to provide long term performance and financial stability seems very unlikely. The tables are color coded, to show how effectual the proposed change is likely to be at improving the program. Red represents no improvement to the program, orange some improvement, and green that the improvement substantially benefits the program.

E 4: Impact of Identified Recommendations Under Scenario 3

	Details	Performance	Convenience	Financial Stability	Flexibility	Fairness and Accountability	Impact Assessment
Scenario 3: More substantial amendments to The Act intended to strengthen the program's structural weaknesses and which change the roles and responsibilities of the different stakeholders; and							
S3a: Remove payment of CRV to redemption routes where the CRV is not passed through to the consumer.	CRVs paid to curbside and drop-off programs are not returned to the consumer. This money in most systems is used to support payments to infrastructure that allows consumers to claim the CRV.						Significant opposition from operators of curbside programs however need to justify why they should receive the \$123.7m in payments over recycling centers who pass through deposit to consumers.
S3b: Stop Processing Payments to curbside and drop off programs	No other program provides funding to curbside programs. Diverts funding from recycling centers that produce higher grade material.						Opposition for curbside and drop off center providers.
S3c: Increase beverage scope to include wine and spirits and cartons,	Wine and spirits add 1.2 billion containers ¹⁶ , expanding container types brings an additional 2.6 billion						Improved quality of recycled glass for new wine and beer bottles manufactured in the state

¹⁶ Container Recycling Institute (2017) *2015 Beverage Market Data Analysis*.

	Details	Performance	Convenience	Financial Stability	Flexibility	Fairness and Accountability	Impact Assessment
aseptic boxes and pouches	containers annually into the program.¹⁷ Increases the environmental impact of the program by increasing the redemption and recycling rate of these containers. Higher return volumes generate economies of scale. May need more robust fraud prevention measures, as there is a greater risk with imported wines and spirits.						All beverage manufacturers (except milk) are involved in the program, so some are not deriving an unfair advantage. Better for recycling centers that are already taking these but are not paid by CalRecycle. Reduces impact of glass on MRFs. Reduces costs for curbside collections and drop-off programs Wine producers may initially be hesitant but, as the USA's largest wine producing state, California is well-placed to show leadership on this and brand owners will benefit from the reliable supply of high-quality recycled glass.

¹⁷ Container Recycling Institute (2017) *2015 Beverage Market Data Analysis*.

	Details	Performance	Convenience	Financial Stability	Flexibility	Fairness and Accountability	Impact Assessment
S3d: Make CalRecycle the material owner, so they collect revenues	Recycling centers no longer carry risk of volatile market prices Marketing the state's material in bulk will generate the highest prices – reducing the program costs to be funded by beverage manufacturers						Reduces the administrative responsibilities on recycling centers and processors. Recycling centers would support because they would receive a new payment calculated to cover costs without taking the risk on scrap values – see S3f below.
S3e: New Processing Fee	Brand owners pay fee, set annually, to cover net costs after unredeemed deposits and material revenues deducted. Will place the Fund on a sustainable footing, allowing fees to be adjusted to reflect actual costs. Moves closer to EPR. Majority of program costs still covered by unredeemed deposits and material revenues. If fees increase as a result of material prices fall, beverage manufacturers						Manufacturers likely to oppose any increase in costs while they still have no control over the system and cannot improve it to reduce their costs.

	Details	Performance	Convenience	Financial Stability	Flexibility	Fairness and Accountability	Impact Assessment
	can offset this by the reduced cost of recycled material that they purchase for new containers.						
S3f: Replace Handling Fees and Processing Payments with a single new recycling point (centres and retailers) payment based on a per unit verified cost.	Paid for every container. Set annually on basis of estimated future costs and RFR negotiated with industry. Differentiates between container material and reverse vending machine/ manual service.						Provides a sustainable income for recycling centers. Allows recycling centers and retailers to plan and invest Recycling centers and retailers are compensated for the costs of reverse vending machines (RVMs), which improve customer service, reduce fraud losses and reduce transport costs.
S3f: Include clause and incentives to mitigate fraud	Require all units sold in the market to carry state-specific barcodes. Require all units redeemed to be verified via barcode recognition either at the point of redemption or through central counting machines at processors, this removes requirement for payment by weight.						Brand owners compensated for additional labelling costs by reduced fee Recycling centers will be paid for all the actual containers they refund, not estimates. Higher CRV and increased convenience in any case means original consumer more likely to redeem, and more frequently in lower volumes.

Scenario 4, by definition, would transform the program. It is fully in line with the principles of Extended Producer Responsibility (EPR), seen in high performing systems in Europe¹⁸ and in Oregon, where manufacturers, distributors and retailers have established non-profits, through which they ensure they are compliant with the legislation. Table E5 provides recommendations for bill reform and is based on achieving the following system framework principals:

- 1) **Governance:** Legislation must be enabling and not overly prescriptive on process, with the focus on outcomes. Role of government should be:
 - a. Setting and enforcing a redemption and convenience target;
 - b. Establishing the need for continuous improvement by putting in place mechanisms to adjust the level of deposit if redemption and recycling targets are not being achieved for an agreed-upon number of consecutive years and ensuring that that consumers can conveniently redeem containers; and
 - c. Establishing the responsibilities of government to include audit, oversight and enforcement.
- 2) **Management:** Those parties responsible for the supply and, in some cases, sale of beverages (essentially producers, distributors and retailers) are given the shared responsibility for meeting the requirements of the legislation through a collaborative administrative approach and free market driven operational delivery, ensuring cost efficiency and compliance. This includes:
 - a. Putting in place a non profit producer responsibility organization to oversee the system;
 - b. Enabling and commissioning of services that:
 - i. Deliver return infrastructure and options to ensure consumers can redeem as easily as they can consume;
 - ii. Offer technology driven solutions that drive efficiencies in respect to transport and provide transparent and accurate recording of units sold and containers returned for billing and fraud mitigation;
 - iii. Optimize costs through a market-driven approach to infrastructure and fees to producers such that containers that non-recyclable containers are eliminated.
- 3) **Delivery:** Organizations appointed by the producer responsibly organization are given the responsibility for operational delivery and required to report through performance management indicators to demonstrate achievement of, and compliance with program financial, legal, environmental and social goals.

¹⁸ Including Norway, Sweden and Finland.

E 5: Impact of Identified Recommendations under Scenario 4

	Details	Performance	Convenience	Financial Stability	Flexibility	Fairness and Accountability	Impact Assessment
Scenario 4: Redesign: A fresh policy approach to meet, and exceed, the program goals.							
Introduce new Act requiring beverage industry to ensure that 90% of their containers are redeemed and recycled	Include financial penalties if target is missed, increasing as the redemption and recycling rate declines. Legislation will detail the container types and beverages that are affected, but brand owners can decide the optimal CRV level and return infrastructure to achieve the 90% rate and minimize their costs. Report annually to CalRecycle, publishing annual accounts and reports						Manufacturers may oppose but the current system is not delivering the levels of redemption that has been demonstrated in other programs and that would place more recycled content into the market to enable manufacturers to meet recycled content goals. Most successful systems allow manufacturers to use their expertise to design the most effective and efficient system. Manufacturers increasingly recognize the benefits of a DRP in terms of the high-quality outputs, but are deterred by the bureaucracy common under government's run programs. Can provide positive publicity for brand owners, particularly when consumers are increasingly concerned about resource efficiency, littering and marine plastics.

	Details	Performance	Convenience	Financial Stability	Flexibility	Fairness and Accountability	Impact Assessment
							Reduces the burden on taxpayers. Government and brand owners can hold the organization to account and consider where there is scope for improvement
Government oversight, audit and enforcement	A light touch approach to what is included in legislation, with the focus on: 1) setting and enforcing a redemption and recycling target; 2) auditing of industry 3) establishing need for continuous improvement, putting in place mechanisms for the industry to adjust the level of deposit if redemption and recycling targets are not being achieved for an agreed set consecutive number of years and ensuring that that consumers can conveniently redeem containers.						Creates more flexibility for agency and program operators and administrators to act to manage through changing market conditions and performance trends. Government can concentrate on auditing the program to ensure targets are met and to address fraud.

	Details	Performance	Convenience	Financial Stability	Flexibility	Fairness and Accountability	Impact Assessment
Manufacturers can delegate responsibilities to an Extended Producer Responsibility central system administrator (CSA) acting on behalf of the whole industry	Manufacturers can sit on the board to hold the organization to account and ensure they are consulted. Prevents a decentralized system that is inefficient and less accountable. CSA retains unredeemed deposits and material revenues to off-set costs. Industry determines the mechanism for members to financially support the program. Single organization whose sole responsibility is to achieve the required results – can decide what marketing and education campaigns are needed.						Minimizes manufacturers' administrative and operational responsibilities. Gives manufacturers confidence the organization is acting in their interests.
Free market approach to provision of redemption infrastructure	CSA procures and commissions services that will: 1) Deliver redemption infrastructure and options to ensure it is as easy to return containers as it is to purchase a beverage; 2) Offer technology driven solutions that will drive efficiencies in						Removes need for convenience zones because recycling infrastructure will have to be provided at a density and in locations to ensure target is met. Procurement of service will ensure continuous improvement, investment and cost efficiency.

	Details	Performance	Convenience	Financial Stability	Flexibility	Fairness and Accountability	Impact Assessment
	respect to transport and provide transparent and accurate data; 3) Mitigate fraud.						
Law requires brand owners to make provision for convenient return points and sets convenience targets such that is as easy for consumers to return containers and clam their deposit as it is for them to purchase a beverage minimizing the environmental impact of returning and transporting the containers.	CSA organization has the flexibility to choose the return infrastructure needed to achieve a 90% redemption for recycling rate and meet convenience targets such that all geographic areas are serviced. Consideration is needed for the environmental impact to prevent consumers having to travel long distances purely to return their containers. As they are legally required to meet the target, and financially incentivized for doing so, the CSA would have to pay an appropriate fee to recycling points (retail or recycling centres) to ensure they are viable operations and consumers have choice over when and where to redeem.						Consumers are able to easily claim their deposit Brand owners can only support redemption infrastructure that will allow consumers to claim their deposit and the targets to be met without excessive cost.

The beverage industry may oppose redesign; however, the current system is failing the beverage industry in the following ways:

- Recycling rates, although higher than through a curbside program alone, are not reaching the levels other DRP programs have demonstrated are achievable. Programs in Oregon, Michigan and in many European countries are delivering in excess of 90% return rates. If the California program had achieved a 90% redemption rate for aluminum and PET in 2017, an additional 55,654 tons of recyclable material would have been sold, generating revenues of in excess of \$23m, and providing a supply of recycled PET necessary for manufacturers to meet their minimum recycled content goals.
- The program currently operates with an estimated surplus of \$340.9m,¹⁹ yet there are insufficient mechanisms within the Act to ensure that the funding supports programs that will deliver high return rates. The Act also allocates funds to supplementary programs for which there has been no assessment of their environmental or cost benefit to the program goals.

Beverage companies are openly starting to support DRPs (see Coca Cola’s 10-point plan to DRP in Appendix A.3.0). DRPs are a sure mechanism for capturing high grade material that can be used to meet minimum recycled content goals; reduce land and marine based litter; and comply with increasing targets such as set in the European Commission’s single use plastics directive, which will require 90% of plastic bottles to be collected for recycling by 2030.

The former Governor Brown said that any revisions to The Act “should balance three different components”²⁰

- 1) Fiscal sustainability;
- 2) Improved collection; and
- 3) Incentives for innovative recycling.

Scenario 4 is best placed to meet these objectives. In many respects, California is known for its pioneering environmental legislation and action. Choosing Scenario 4 would follow the example the state has set itself, with a world class, outcomes-focused system. Furthermore, the flexible design would mean the legislation itself should not come under continuous

¹⁹ Project fund balances for the end of FY 2017/18 reported in Q1 statement in the 5 funds are: \$272.4 million in main beverage container recycling account (End of FY 2017/18: \$297.5 million); \$18.8 million in glass account (End of FY 2017/18: \$19.1 million); \$22.4 million in the PET plastics account (End of FY 2017/18: \$18.4 million); \$21.5 million in bimetal account (End of FY 2017/18: \$22.2 million); \$5.8 million in penalty account (End of FY 2017/18: \$6.3 million)

²⁰ <https://www.gov.ca.gov/wp-content/uploads/2018/09/SB-452-veto.pdf>

scrutiny – allowing legislators to focus on other issues and beverage manufacturers, distributors, recycling centers and grocers to focus on their businesses.

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1.0 Introduction

California's Beverage Container Recycling Program (the program) was introduced by the California Beverage Container Recycling & Litter Reduction Act (The Act) in 1986.²¹ The program, like other Bottle Bills, was introduced to reduce container-based littering and increase recycling. A corollary of this is an increased supply of high-quality secondary material available for new beverage containers, helping brand owners close the loop and meet minimum recycled content commitments.

The Californian program has, in the past, achieved impressive results but there is now a common perception that it needs reform to ensure long term stability and sustainability. The closure of recycling centers has denied consumers the opportunity to redeem their deposit – the “California Redemption Value” (CRV). This means the success of the program, measured by its recycling rate, has declined.

Additionally, its financial viability largely relies on under-achieving, while the closer the program is to achieving or exceeding its targets, the more likely it is to run a deficit. This is because the two sources of revenue (predominantly unredeemed deposits and, to a much lesser extent, Processing Payments from manufacturers) fall as the costs of the system increase. With manufacturers required to contribute little, the system is largely paid for by consumers who either choose not to or, increasingly, cannot claim their CRV refund. While, there is common agreement on the need for change, there is much less consensus over what form these changes should take. This report identifies options for reform and measures that are needed to put the program on a sustainable footing and ensure it achieves the best results for Californians.

In this section, we outline, based on our experience of US, Canadian, European and Australian Deposit Return Programs (DRP), some of the design aspects of a high performing, low cost DRP. We then summarize the objectives that any reforms should intend to achieve under four specific scenarios.

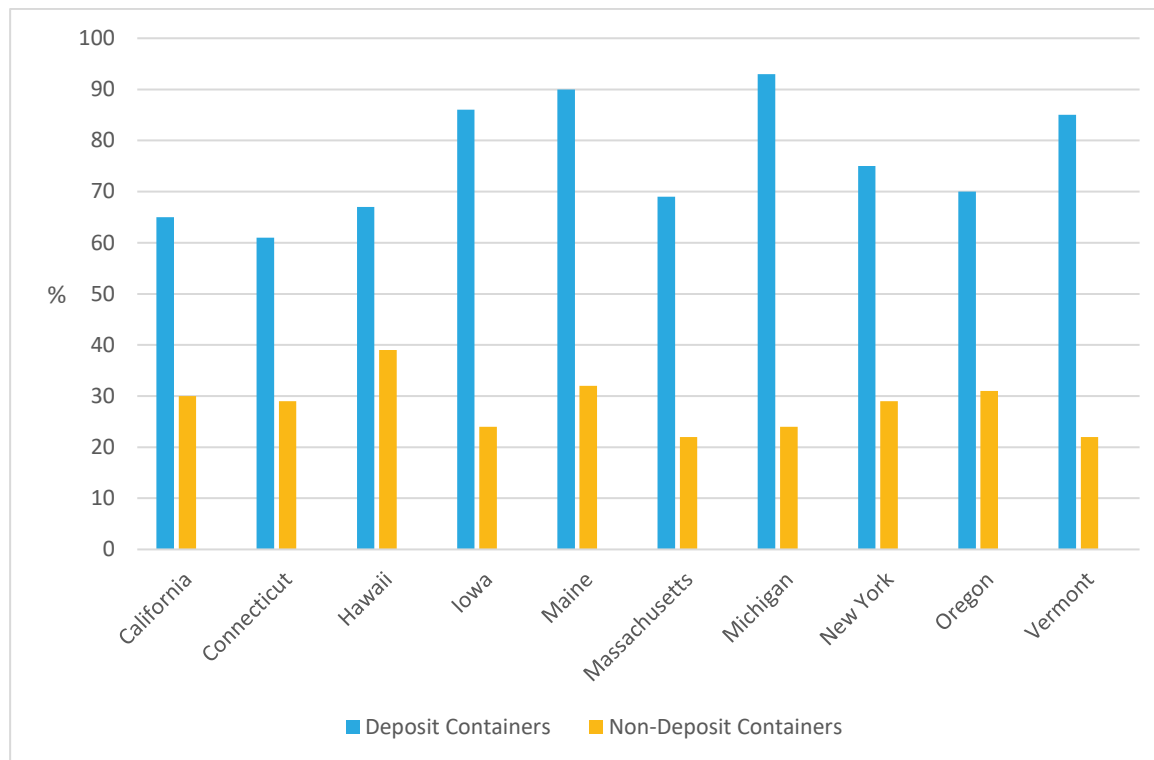
1.1 Designs Associated with High Recycling Rates

DRP's are proven to out-perform the curbside programs they complement, in terms of the recycling rates achieved (see Figure 1-1), contamination levels and loss rates. The design of a

²¹ <https://www2.calrecycle.ca.gov/Publications/Details/1478>

DRP, though, is key to its performance, with different designs delivering varying degrees of success (from a 51% return rate in Connecticut²² to 97% in Germany²³).

Figure 1-1: Beverage Container Recycling Rates



Source: Data from 2015 Beverage Market Data Analysis, The Container Recycling Institute, 2017.

DRPs have the added benefit of producing a better quality of material which can warrant a higher market price than material that has been extracted from a single stream curbside system through a Materials Recovery Facility (MRF). This is demonstrated in California by The Act including provision for funding, through the quality incentive payment, to improve material quality from single stream curbside collections.²⁴

The benefits a DRP delivers in terms of reduced litter have been further highlighted in recent years with greater knowledge and understanding of the impact single use plastic items, including drinks containers, are having on our marine environment.

The Californian system, illustrated in Figure 2-1, has a unique design due to the nature of its governance; take-back infrastructure; financing; and inclusion of alternative collection

²² <http://www.bottlebill.org/legislation/usa/connecticut.htm>

²³ CM Consulting & Reloop (2017) *Deposit Systems for One-Way Beverage Containers: Global Overview 2016*

²⁴ §14549.1. (a) of California Beverage Container Recycling & Litter Reduction Act

methods like curbside programs. As explained in the following sections, it is not achieving the best results in terms of redemption and recycling rates, litter reduction and quality of material. By contrast, DRPs that consistently achieve high redemption rates (as a minimum in excess of 80%) at low cost (somewhere between \$0.005 and \$0.01 per container sold) typically share a number of similar characteristics:

- 1) A light touch approach to what is in legislation, with the focus on setting and enforcing a redemption and recycling target. The fewer details that are in the legislation, the more flexibility the system operator has to react to factors that affect performance.
- 2) Those parties responsible for the supply and, in some cases, sale of beverages (essentially manufacturers, distributors and grocers) come together as one, and are given the flexibility to design and operate a system to achieve the targets whilst at the same time ensuring the system is financially stable. This includes:
 - a. Putting in place a central system operator (CSO) to manage the system on their behalf;
 - b. Setting a Handling Fee to ensure sufficient and convenient redemption infrastructure;
 - c. Setting the deposit at a level to motivate consumers to redeem; and
 - d. Putting in place mechanisms to mitigate fraud.
- 3) The role of government is one of audit, oversight and enforcement.

DRPs operated by manufacturers, distributors and retailers, through a central system administrator (CSA), are typically operated on a non-profit basis and funded through a combination of:

- Material revenues;
- Unredeemed deposits; and
- Member organization subscriptions.

1.2 Reform Objectives

If it is accepted that reform is needed, before considering what form these changes could take, it is important to determine what the reforms are intended to achieve. Any reforms should be assessed against the following criteria:

- **High Performance:** Reliably exceeding the current 80% target, and preferably 90%+ which is comparable to the worlds best performing programs;
- **Convenience:** Ensuring it is as easy to redeem an empty container as it is to purchase a beverage;
- **Financial stability:** Providing for program's financial sustainability and delivering value for money;
- **Flexibility:** Allowing for the system operator to easily and quickly make changes to the system to ensure targets are met; and

- **Fairness and accountability:** Both in terms of who pays for the system and in payments to those parties providing the redemption infrastructure.

It is also necessary to reflect on the prospects for implementing the reforms: the Californian system has been in operation for over 30 years and has changed little over this time, so it is clear that any reforms would need not only the support of the State Legislature, but also of beverage manufacturers, grocers and recycling centers.

1.3 Options for Reform

This report examines the types of measures that could be implemented to stabilize the program, putting it on a sustainable financial footing and improving recycling rates. The measures proposed are based on four scenarios:

- 1) Optimizing the current program: Reforms that could be implemented without any change to The Act;
- 2) Changes broadly within the confines of the current program, involving minor amendments to The Act and which do not fundamentally change the design of the program;
- 3) More substantial amendments to The Act intended to strengthen the program's structural weaknesses and which change the roles and responsibilities of the different stakeholders; and
- 4) Redesign: A fresh approach to delivering a 90% redemption for recycling rate.

So as to identify measures under each of the above scenarios, Eunomia firstly examined the current legislation to determine the exact program specification, the scope for reform within the legislative framework and the potential for legislative amendments. Following a literature review and assessment of bills introduced in the State Legislature, Eunomia conducted telephone interviews with key stakeholders:

- Susan Collins – President of The Container Recycling Institute (CRI), a non-profit organization working to make the USA a global leader in the collection and quality recycling of packaging;
- Mark Murray – Executive Director of Californians Against Waste (CAW), a non-profit environmental advocacy organization;
- David Lawrence – President & Chief Financial Officer of rePlanet, the largest recycling center network in California;
- Derek Chernow – Aide to Senator Wieckowski, sponsor of SB 168; and
- Genevieve Wong – Consultant to the Committee on Environmental Quality, California State Senate.

We approached CalRecycle to discuss areas of reform. While they did not agree to an interview, they did answer some specific questions. Eunomia also reviewed data and reports produced by CalRecycle to fully understand the way the program is funded.

In the following sections, this report first provides an overview of how the existing system operates in terms of container, data and monetary flows (Section 2.0). The program is then reviewed using the criteria set out Section 1.2 in Section 3.0. Section 4.0 proposes recommendations for reform under the four scenarios and assesses their potential impact on the long-term stability of the program and on stakeholders. The conclusions and next steps are set out on Section 5.0.

2.0 Overview of Current System

In this section, we provide a high-level overview of the current system to give context to the review presented in Section 3.0.

2.1 System Overview

Figure 2-1 illustrates the key relationships in the Californian program, with the financial flows and management of data and containers. The flows are further explained below.

Beverage Container Flow:

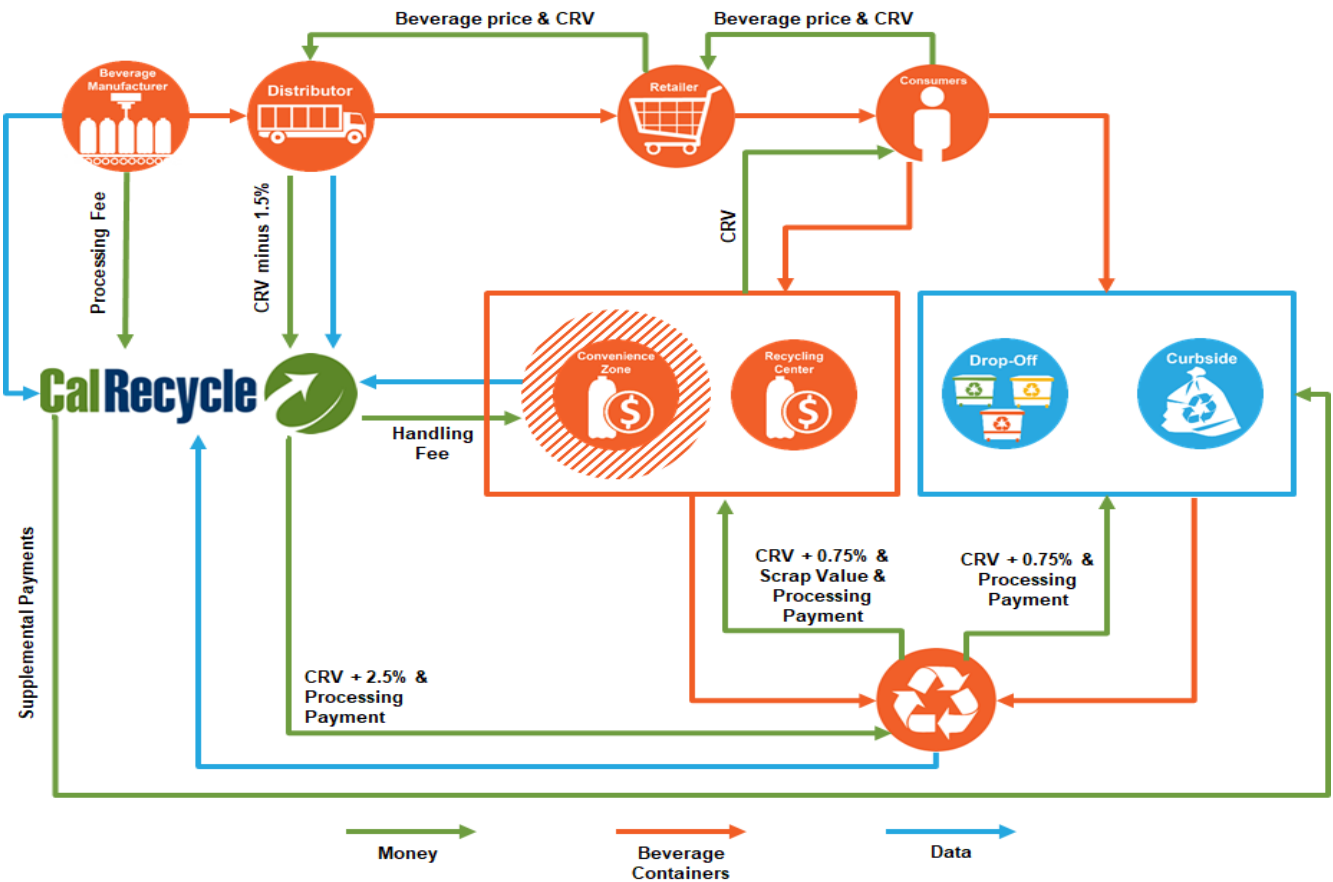
- **Full container:** Beverage manufacturer supplies the distributor who supplies the retailer or restaurant who then supplies the consumer. The beverages that are included within the scope of the current program are listed in Appendix A.1.1.
- **Empty container:** Consumers can:
 - Return containers to recycling centers and redeem the CRV. These units are collected by processors who then sell the material to the market; or
 - Place containers in curbside/drop-off systems. In this case, they do not receive the CRV and it is instead collected by the curbside or drop-off center operator.

Data Flow:

- **Units sold/transferred:** Beverage manufacturers pay the Processing Fee for every container sold/transferred to a distributor. This figure is used to assess the number of eligible containers sold. There is no direct requirement in The Act for manufacturers to report on the number of beverages sold.
- **Reporting to CalRecycle:** Distributors provide data to CalRecycle on the number of beverages sold in each type of container on a monthly basis.
- **Handling Fee:** To calculate the Handling Fee, eligible recycling centers submit a claim to CalRecycle on a monthly basis. The Handling Fee calculation and claim criteria are discussed under the monetary flow bullet points below.
- **Units processed:** Processors provide data each month on the “amount of empty beverage containers, by material type and weight of container ... received from recycling centers and curbside programs for recycling, and the scrap value paid or

glass, PET, and bimal containers and any beverage container that is assessed a processing fee.”²⁵

Figure 2-1: Material, Financial and Data flows in the Californian Beverage Container Program



²⁵ §14550. (a)(1) of The Act

Monetary Flow:

- **Beverage Container Fund (the Fund):** The Fund is the mechanism through which CalRecycle manages monetary flows through the system. CRVs are paid into and out of the Fund as summarized below:
 - Distributors pay the CRVs into the Fund, deducting their Admin Fee.
 - Recycling Centers refund the CRV to redeemers.
 - Processors pay the CRV (plus Admin Fees and Processing Payments) to recycling centers, curbside collectors or drop-off programs.²⁶
 - CalRecycle reimburses processors.

More detail is provided in Appendix A.1.2.

- **CRV:**
 - **Payment:** CRV is initiated by the distributor which is then paid by the retailer and subsequently the consumer.
 - **Recovery:** The CRV can be recovered by either:
 - The consumer by returning the unit to a recycling center, which then recovers the CRV from the processor, who recovers it from CalRecycle; or
 - Operators of curbside and drop-off programs, who also recover from processors, who recover from CalRecycle.
- **Scrap value:** Ownership of the material is with the recycling center or curbside program. Recycling centers sell their material to processors at its market value and, as such, take all risk on material value.
- **Processing payments:** Processing payments are paid to certified recycling centers, curbside and drop-off programs for every CRV container collected. In 2017, CalRecycle paid \$111.043 million in processing payments.²⁷ The Payments are adjusted annually to allow for a cost of living adjustment (COLA). The formula for calculating them is:

$$\text{Processing Payments} = \text{Cost of Recycling} \times \text{COLA} \times \text{Reasonable Financial Return} - \text{Scrap Value}$$

The cost of recycling is calculated every two years through a survey of recycling centers from the previous two years, known as the 'cost survey'. As the cost survey is retrospective in nature, the Processing Payments set by CalRecycle in July 2018

²⁶ Where containers are returned to drop-off or curbside programs, the program operators are paid a commingled rate, set by CalRecycle, on the assumed ratio of CRV-bearing containers to non-CRV containers.

²⁷ CalRecycle (2018) *California's Beverage Container Recycling and Litter Reduction Program Factsheet*. June 2018.

were based costs in the 2016 calendar year.²⁸ Further information on the processing payments is contained in Appendix A.1.5.

- **Handling Fees:** Certain recycling centers can additionally receive a Handling Fee which is supposed to cover a proportion of the operating costs. The Handling Fee is calculated annually and paid by CalRecycle from the Beverage Container Recycling Fund. The calculation is as follows:

$$\text{Handling fee} = \text{Statewide weighted average costs of centers that receive Handling Fees} - \text{Statewide weighted average costs of centers that don't receive Handling Fees}^{29}$$

Eligibility criteria for Handling Fees are contained in Appendix A.1.3.

- **Processing Fees:** These are paid by manufacturers to CalRecycle. Fees vary by the beverage container material and are additionally linked to the recycling rate. Further information on how the processing fee is calculated is provided in Appendix A.1.4.
- **Admin fees:** Distributors retain 1.5% of the CRV they initiate to compensate them for any administrative costs. Similarly, processors are paid an additional 2.5% of the CRV they refund; passing on 0.75% to recycling centers and curbside/drop-off programs, and retaining 1.75%. These percentages have never been benchmarked against actual costs incurred and, due to advances in technology, it can be assumed that these costs would have decreased since The Act came into force. Further details on admin fees is contained in A.1.6.
- **Supplemental programs:** The Act includes set sums to be paid from the Fund to other programs that assist with container recycling and litter reduction. These are summarized briefly here:
 - \$15 million annually to curbside and drop-off programs, with payments made on a per container basis.
 - \$10.5 million annually for municipal beverage container recycling and litter clean-up activities. Comprising \$5,000 payments to cities and \$10,000 for payments to counties.
 - \$1.5 million in grants for beverage container recycling and litter reduction programs.
 - Up to \$5 million for statewide public education and information campaigns.
 - Up to \$10 million for quality incentive payments (QIP) to improve the quality of glass bottled collected through curbside or drop-off programs.

²⁸ CalRecycle (2018) *2017 Processing Fee and Handling Fee Cost Surveys*. Contractor's Report by Crowe Howarth LLP. June 2018.

²⁹ AB 2020, paragraph 14585(f)(3)

- Up to \$10 million for market development payments for empty plastic bottles.³⁰
- \$20.974 million plus cost of living adjustment, minus \$15 million, for grants for beverage container litter reduction and recycling programs for certified community conservation corps.³¹

Unlike most DRPs, and certainly the most effective systems, the Californian program does not support Extended Producer Responsibility (EPR), but relies on consumers and taxpayers to fund the system.

2.2 Roles and Responsibilities in the Current System

Table 2-1 summarizes:

- the role and responsibilities of each stakeholder in the program;
- the implication of current system design and stakeholder responsibilities, as defined in The Act, on program success; and
- the influencing potential of each stakeholder.

Table 2-1: Implications of System Design

Stakeholder	Role & Responsibilities	Impact of System Design	Influencing Potential
CalRecycle 	Administers the program and co-ordinates payments using predominately unredeemed CRV's. Has some oversight of data (sales and return-volumes). Certifies recycling centers. Produces reports and accounts for Legislature. Commissions cost surveys.	Costs of the system predominantly fall on consumers and taxpayers. Little accountability for program results. No flexibility to improve the system. Low return rates are required because the unredeemed CRVs fund the system and CalRecycle has no mechanism to increase payments from manufacturers.	Work with legislators to adjust mechanisms to improve return rates: system design; CRV; Handling Fees; Processing Payments. Grants exemptions for convenience zones and enforces retailer obligations, so can improve convenience.

Stakeholder	Role & Responsibilities	Impact of System Design	Influencing Potential
Beverage Manufacturers 	Pay a Processing Fee to CalRecycle. Label containers with “California Redemption Value” or “CRV”. Submit monthly reports to CalRecycle’s Division of Recycling Integrated Information System (DORIIS).	Cover only 6% of program costs. Do not carry the risk of quarterly changes to material values. Fees recognize the different costs and values of different materials. Rewarded for higher return rates up to 75%. Apart from aluminum, no reward for more easily recycled containers. Potential to under-report sales.	No control over the system or returns rates. Can work with CalRecycle and legislators to improve return rates: system design; CRV; Handling Fees; Processing Payments but no financial imperative to do so.
Beverage Distributors 	Pay CRV to CalRecycle and charge it to retailers. Submit monthly reports to DORIIS. Receive admin fee equivalent of \$0.0008 per container redeemed or 4.5% of all Fund.	Minimal responsibilities and are paid Admin Fees to cover their costs although not clear what costs are incurred. Costs should have reduced with development of IT for reporting. Typically, distributors would be part funders of the program not recipients of funds.	No control over system but internal procedures could reduce their own admin costs
Grocers 	Pay the CRV to distributors and pass it on to consumers. Display signs with information on the nearest recycling center. If in an unserved zone, either allow consumers to redeem or pay \$100/ day.	Minimal involvement compared to most other systems. Anecdotal reports that they can evade responsibilities in unserved zones so not all treated equitably. No legal obligation or financial incentive for most retailers to support the program. Limited checks on option A retailers, unless CalRecycle receives a complaint.	Are in a position to offer high quality service to customers but are given a choice with imbalanced incentives.

Stakeholder	Role & Responsibilities	Impact of System Design	Influencing Potential
Recycling Centers³² 	Refund consumers for their used containers and sell these to processors for the scrap value, CRV, Processing Payments and Admin Fees.	Time-lag means actual costs are not being covered and real scrap values not reflected in Processing Payment. Carry the risk of volatile material market prices. Cannot plan for medium/longer-term income. Material split between multiple providers therefore unable to negotiate best price for large volumes. Higher return volumes provide economies of scale and more Processing Payments. But not sufficient to cover costs.	Can provide high quality & convenient service to help increase recycling rates. But not rewarded for doing so.
Processors 	Buy used containers from recycling centers and prepare for reuse. Pay CRV, Processing Payments and Admin Fees to recycling centers and collect from CalRecycle.	Are vulnerable to changes in market values. Receive an Admin Fee equivalent to \$0.001c per unit Guaranteed higher quality material if buy from recycling centers rather than curbside.	No control over volume of returns, scrap values or quality of material Can choose where to buy from.
Curbside & Drop-Off Programs 	Collect used containers as part of collection services with other materials.	Receive CRV plus Admin Fees and Processing Payments which are proportionately more than Recycling Centers because of a higher proportion of glass and plastic which attracts a Processing Fee. Also	Collection system choices e.g. single stream vs. dual stream, affect the quality of the recycled material, and could consequently

³²Recycling centers (“redemption centers” in other Bottle Bill states) are private enterprises that own the returned material. Most are small, independent operations and “old line recyclers” (traditional recycling centers that typically accept large quantities of materials, including from municipal and commercial waste services) but around 300 are run by rePlanet (the vast majority of which are in convenience zones).

Stakeholder	Role & Responsibilities	Impact of System Design	Influencing Potential
		receive \$15 million fund, generate revenue for services plus QIP. Low CRV redemption rate means they can collect more containers, increasing their revenue. Material collected will be more contaminated and glass more likely to be broken.	affect average scrap values.
Consumers 	Take containers to a recycling center to redeem their CRV or recycle it through curbside/ drop-off programs.	Consumers are supposed to have a great deal of choice, but this has reduced in recent years, meaning some have to travel significant distances to redeem their CRV. If they cannot do so, CRV effectively becomes a tax; undermining the central principles of a DRP. CRV is either lost or recovered by operators of curbside and drop-off centers. Low CRV and closing recycling centers undermine incentive and convenience of redeeming.	Choice of whether to redeem but less choice over where or how to redeem.
State Legislature and Governor 	Introduce and approve any amendments to The Act.	Legislators face political pressure from all sides to both pass amendments and oppose them.	Able to propose alternatives to improve system stability, increase performance, and allocate costs and risks fairly.

3.0 Program Review

In this section, we review the current system in the context of the key system requirements set out in Section 1.2.

3.1 Performance

In 2017, the program missed its 80% target and, as Figure 3-1 shows, recycling rates have been declining since a peak of 85% in 2013. With containers “donated” to curbside and drop-off programs included in the official results, the actual return rate to recycling centers is just 66%.

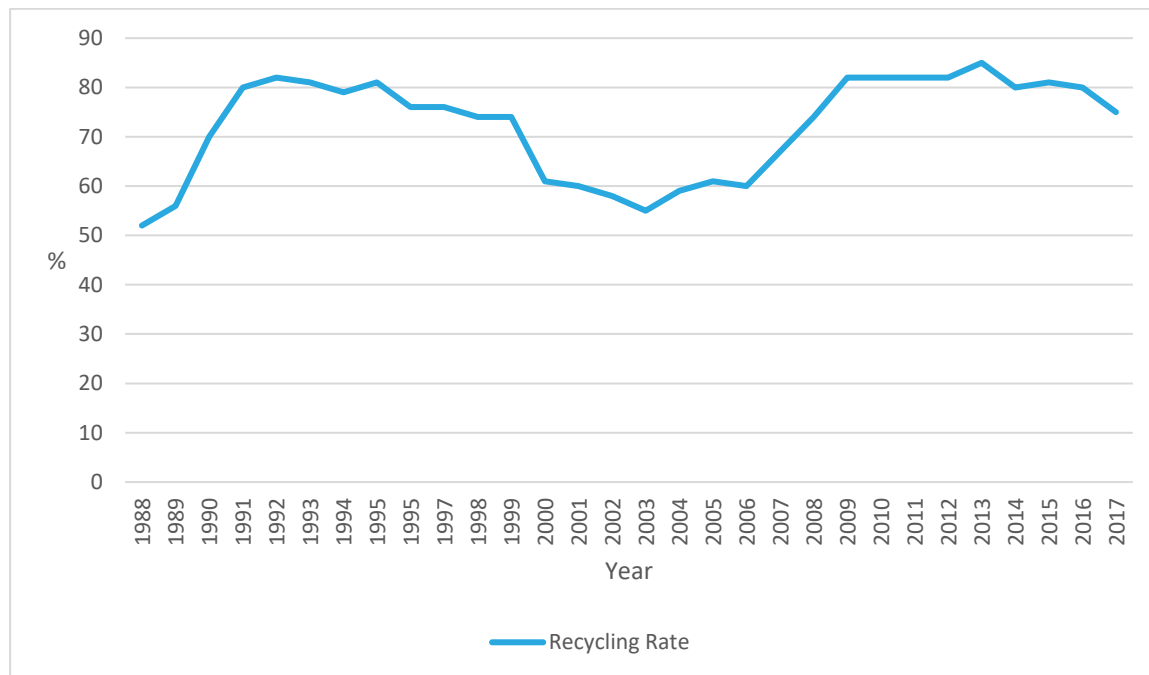
The consequences of this declining performance are:

- More than 1.7 million additional containers are littered or landfilled every day.³³
- An increasing proportion of glass bottles are collected at the curbside.³⁴ The result is lower quality material and the need to provide Quality Incentive Payments (QIP), which detract from funding to recycling centers.
- The program is failing to meet its goals.

³³ Californians Against Waste: <https://www.cawrecycles.org/sb-452-glazer>

³⁴ CRI (2017) *The California Redemption Center Crisis – An Opportunity for Innovation*. Webinar, November 8, 2017.

Figure 3-1: California Beverage Container Recycling Rate



Source: <https://www.calrecycle.ca.gov/docs/cr/BevContainer/Rates/BiannualRpt/JulyDecRpt.pdf>

The decline is in part due to the diminishing real-terms value of the deposit, meaning consumers are not motivated to return their containers. However, the fundamental problem is that consumers have fewer opportunities to redeem their CRV, so no realistic level of CRV would justify the inconvenience of travelling to a recycling center. At this stage, increasing the lower rate of the CRV to \$0.10, as Oregon has recently done, would, in some parts of California, result in further losses to consumers as the recycling center network is not extensive enough to provide convenient redemption for all.

3.2 Convenience

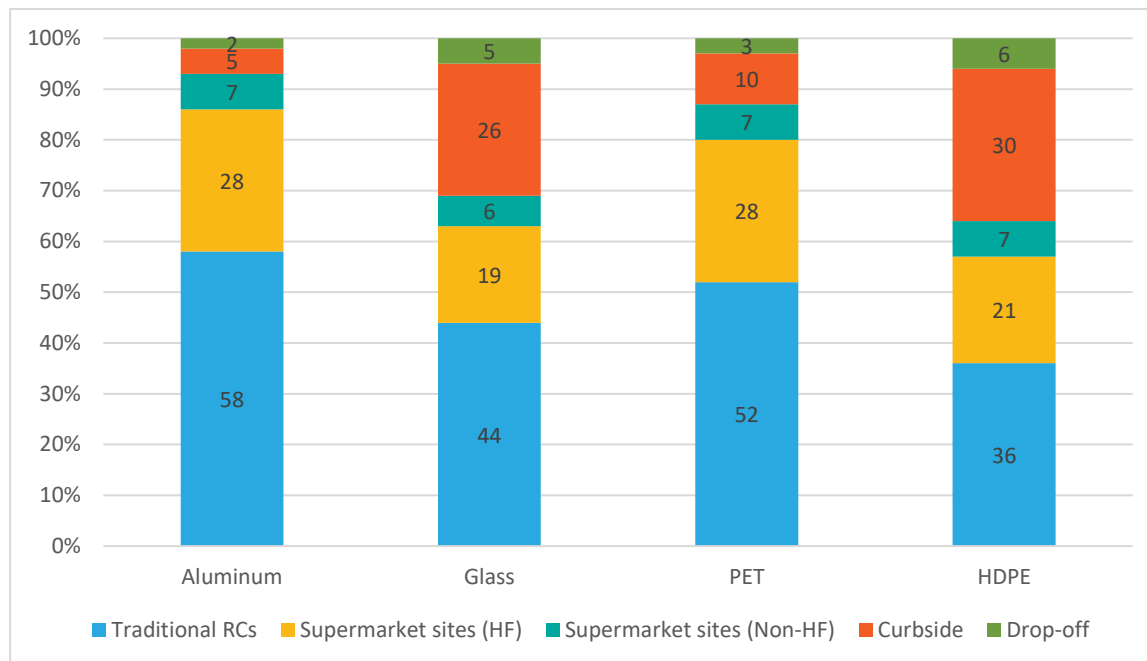
Convenient take-back infrastructure is essential to ensure a high level of units are redeemed for recycling and to give consumers the choice to easily recover their CRV. Redemption routes in California consist of:

- 1) Traditional recycling centers;
- 2) Recycling centers at supermarkets (those that are eligible for Handling Fees)
- 3) Recycling centers at supermarkets (those not eligible for Handling Fees);
- 4) Curbside programs; and
- 5) Drop-off centers.

Under options 1–3, redeemers claim the deposit. Under option 4 and 5, the deposit is kept by the organization that is providing the service, e.g. the curbside or drop-off site operator.

Figure 3-2 sets out the percentage of CRVs refunded to each redemption route by material in 2017 and shows that recycling centers (either traditional or at supermarket sites) are the primary redemption route.

Figure 3-2: Participant Share of CRVs Paid Out by Material 2017



Source: CalRecycle 2018 Factsheet

3.2.1 Recycling Centers

Contrary to many other systems in the US and Europe³⁵, consumers generally do not have the option to redeem containers at supermarkets. Retail redemption provides the most convenient form of redemption for consumers. The California system aims to provide a similar level of convenience through the use of Convenience Zones (CZ). A convenience zone is defined as either of the following:

- 1) The area within a one-half mile radius of a supermarket that has a gross annual sale over \$2 million.³⁶
- 2) The area designated by the department pursuant to Section 14571.5 which relates to convenience zones and recycling centers in rural areas.

³⁵ Norway with 95% redemption and Germany at 97%

³⁶ Supermarket site recycling centers are those located inside the supermarket, or more commonly, adjacent to its entrance or in the parking lot.

In our experience, no other system bases redemption locations on supermarket profits – they either require all grocers to support redemption, or decisions on redemption centers are based on volume of units sold – linked to population and the proximity of neighboring centers.

The Act, however, requires at least one certified recycling center in each convenience zone. Currently, only 36% of the 3,826 convenience zones are served and a further 32% of zones have exemptions.³⁷ It is not only CZ recycling centers that are struggling, recycling centers in general are closing. Californians lost 957 recycling centers between 2013 and 2017³⁸, corresponding with the downward trend in the recycling rate, and 17% of centers closed in 2016 alone. In Marin County, just 2 recycling centers serve 263,604 people, or an area of 2,145 km².³⁹

These closures mean that consumers may have to make special journeys of increasing distance, or wait in longer queues to redeem their CRVs. Table 3-1 indicates how California compares to Michigan, the US Bottle Bill state with the highest redemption for recycling rate (although other factors contribute to this, including a \$0.10 deposit for all containers). Both the population per return point and area per return point is significantly smaller in Michigan than in California.

Table 3-1: Redemption Opportunities in California (Recycling Centers) and Michigan (Retailers)

	Population per Return Point	Area per Return Point	Recycling Rate
California⁴⁰	25,000	270 km ²	75%
Michigan⁴¹	996	25 km ²	92% ⁴²

Source: Eunomia comparison

³⁷ Correspondence with Kassandra Pizzi, CalRecycle 10/23/18

³⁸ CRI (2017) *The California Redemption Center Crisis – An Opportunity for Innovation*. Webinar, November 8, 2017.

³⁹ CRI (2017) *The California Redemption Center Crisis – An Opportunity for Innovation*. Webinar, November 8, 2017.

⁴⁰ Across the state, CalRecycle reports there are currently 1,572 recycling centers.
<https://www2.calrecycle.ca.gov/BevContainer/RecyclingCenters> (08/09/2018)

⁴¹ This is based on the number of retailers served by the Michigan Soft Drink Association, so is likely to be a conservative estimate: <http://www.misoftdrink.net/home.html>

⁴² <http://www.bottlebill.org/resources/pubs/2016RRMichigan.pdf>.

Rural areas are particularly vulnerable to closures because, in general, their volumes are low and as such cost per-container recycled is higher, which makes them more financially vulnerable to market changes⁴³. Emergency measures were recently passed, which permitted CalRecycle to use a higher reasonable rate of return of 16.6% in rural areas, compared to 11.5% for urban areas, in the Processing Payment calculation. Another recent attempt to protect rural recycling centers was SB452, which was presented to the Governor in September 2018 and sought to provide \$3m of funding to rural and underserved areas. The Bill was vetoed by the Governor who said that any revisions to The Act “should balance three different components”, which are set out below.⁴⁴

- 1) Fiscal sustainability;
- 2) Improved collection; and
- 3) Incentives for innovative recycling.

3.2.2 Retailers

The Act states that, if there is no recycling center within the CZ of an eligible supermarket, the CZ is deemed ‘unserved’ and the supermarket can either:

- 1) Sign an affidavit confirming they take-back all used containers and deliver them to a certified recycling center or processor (option A); or
- 2) Pay CalRecycle \$100 per day until a recycling center is established (option B)⁴⁵.

In April 2017, 143 supermarkets chose option B. If all of these supermarkets paid \$100 per day for a year, the program would receive \$5.22 million per annum.⁴⁶ In CalRecycle’s March 2018 quarterly report, however, it forecast \$2.538 million in option B revenue for 2017/18, indicating that they may not be collecting all the possible revenue (although not all unserved zones are necessarily unserved for a full year)⁴⁷.

While the remainder have, in theory, agreed to take back containers, in practice a negligible number of containers are returned to retailers, partly because consumers are not being made aware of the service. It was reported in the interviews for this study that CalRecycle only has 7 inspectors to support retailer compliance. The suggestion is that retailers may prefer to report to CalRecycle that they are taking containers, risking a fine in the event that they are visited that will be less than the \$36,500 annual fee paid by option B retailers. The

⁴³ <https://lao.ca.gov/Publications/Report/3466>

⁴⁴ <https://www.gov.ca.gov/wp-content/uploads/2018/09/SB-452-veto.pdf>

⁴⁵ <http://www.calrecycle.ca.gov/BevContainer/Retailers/OptionB.pdf>

⁴⁶ <http://www.calrecycle.ca.gov/BevContainer/Retailers/OptionB.pdf>

⁴⁷ CalRecycle (2018) *Quarterly Report on the Status of the Beverage Container Recycling Fund (FY 2016-17—Fourth Quarter)*. March 2018.

lack of enforcement is not fair to option B retailers and means that consumers are not able to access the services that were supposedly planned for under The Act.

Regardless of whether CalRecycle is collecting all Option B money, it is clear that the number of redemption locations has dropped and that retailers are not filling the gaps, as intended in The Act. This affects convenience and system performance.

3.2.3 Curbside and Drop-Off Programs

Another anomaly with the California system, compared with other systems, is the ability of curbside and drop-off programs to redeem the CRV and claim Processing Payments. The more recycling centers that close, the more likely it is that consumers will have to forego their deposit and place containers in curbside bins, allowing the curbside or drop-off program operator, which in many cases is a hauler, to claim the CRV refund. In 2017, these programs received \$124m in CRV payments

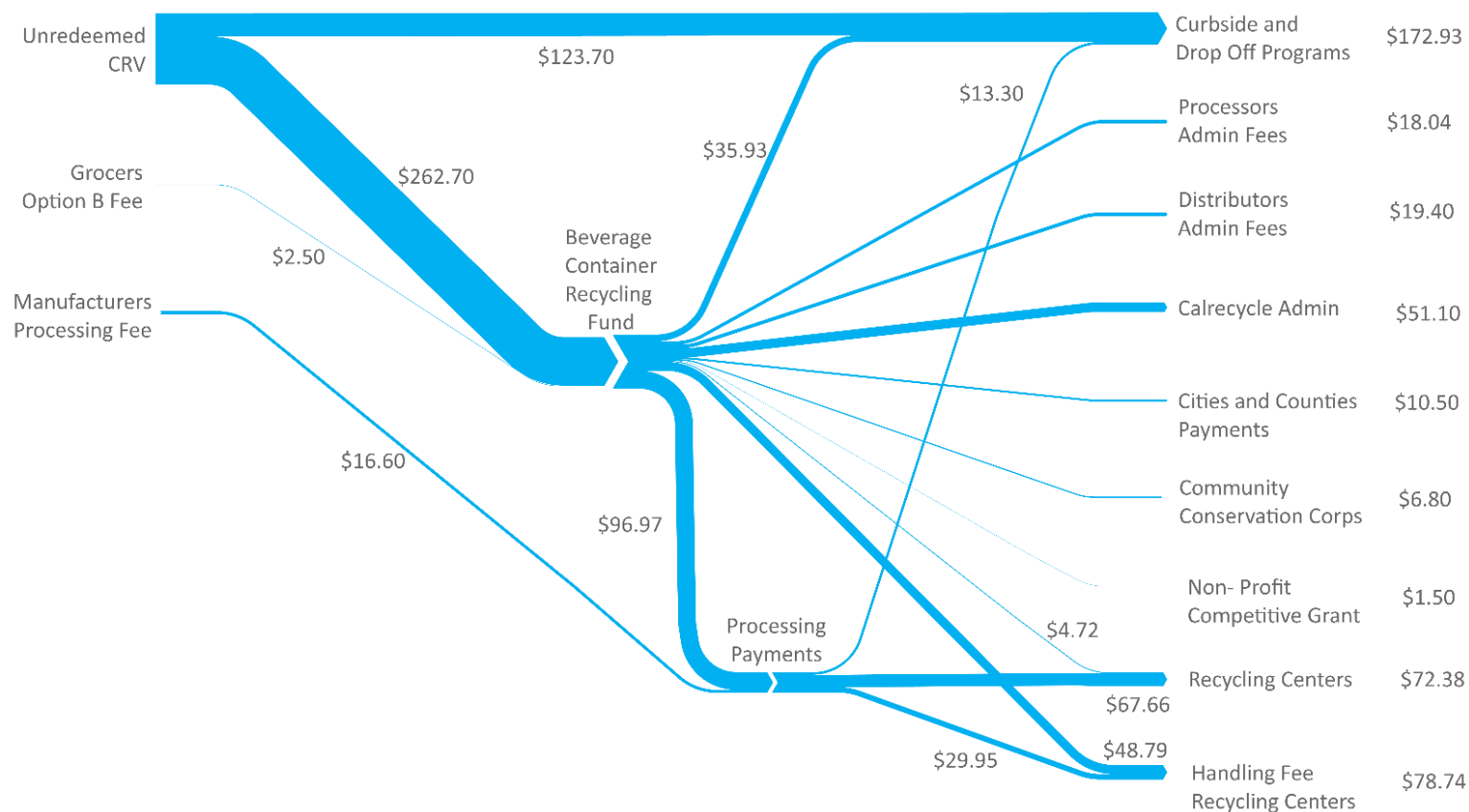
Curbside programs do not provide the same quality of material as recycling centers or retail return which is why The Act includes the QIP, and was further amended to include Market Development Payments for plastic.

3.3 Financial Stability and Cost Effectiveness

In this section, we discuss how both the funding mechanisms and the distribution of funds put pressure on the financial stability of the program as a whole.

The Sankey diagram in Figure 3-3 shows all of program revenues and expenditures.

Figure 3-3: Program Revenue and Expenditures (\$m)

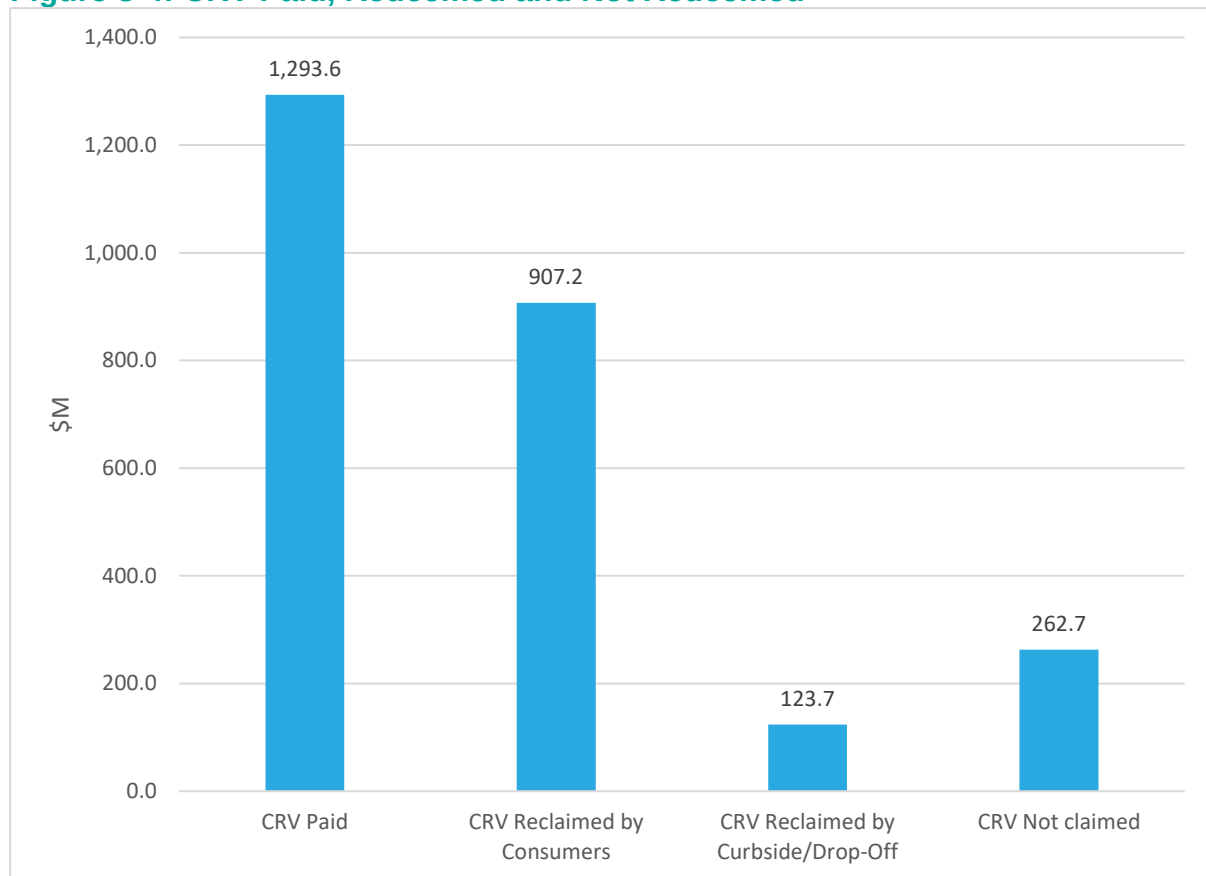


Source: Eunomia calculation from figures presented in 2017 Factsheet

3.3.1 Impact of Funding Mechanism on Program Financial Stability

In 2017, \$1.293.6 billion was paid by consumers in CRVs; \$907.2 million of this was redeemed by consumers directly, with a further \$123.7 million redeemed by curbside/drop-off programs, as shown in Figure 3-4. The ability of curbside programs to access the deposit is very uncommon, especially because curbside programs do not reimburse this money to the consumer. The payment is a remnant from when the deposit program was first implemented and curbside programs were in their infancy. Curbside programs are now well established and have alternative forms of funding.

Figure 3-4: CRV Paid, Redeemed and Not Redeemed



Eunomia calculation from CalRecycle Factsheet, 2017

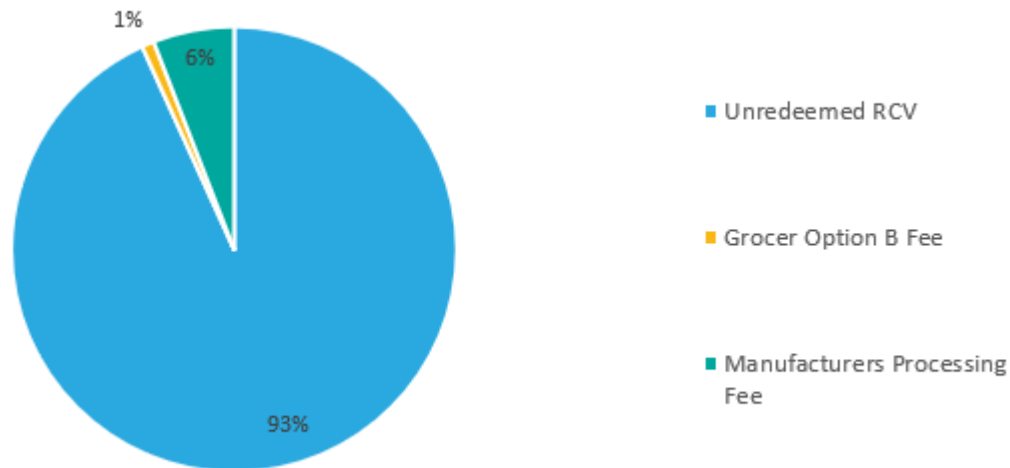
The system annually costs \$428.9 million and is funded through:

- CRVs unclaimed by consumers (93%);
- Supermarkets paying the fee for choosing option B (1%); and
- Manufacturers' Processing Fees (6%);

In addition, there are interest payments, which were reported as in 2017 as \$0.4m. Recycling centers and curbside programs also receive income from the sale of material, but this is not processed through CalRecycle.

These figures are visually represented in Figure 3-5.

Figure 3-5: System Funding



Eunomia calculation from CalRecycle data

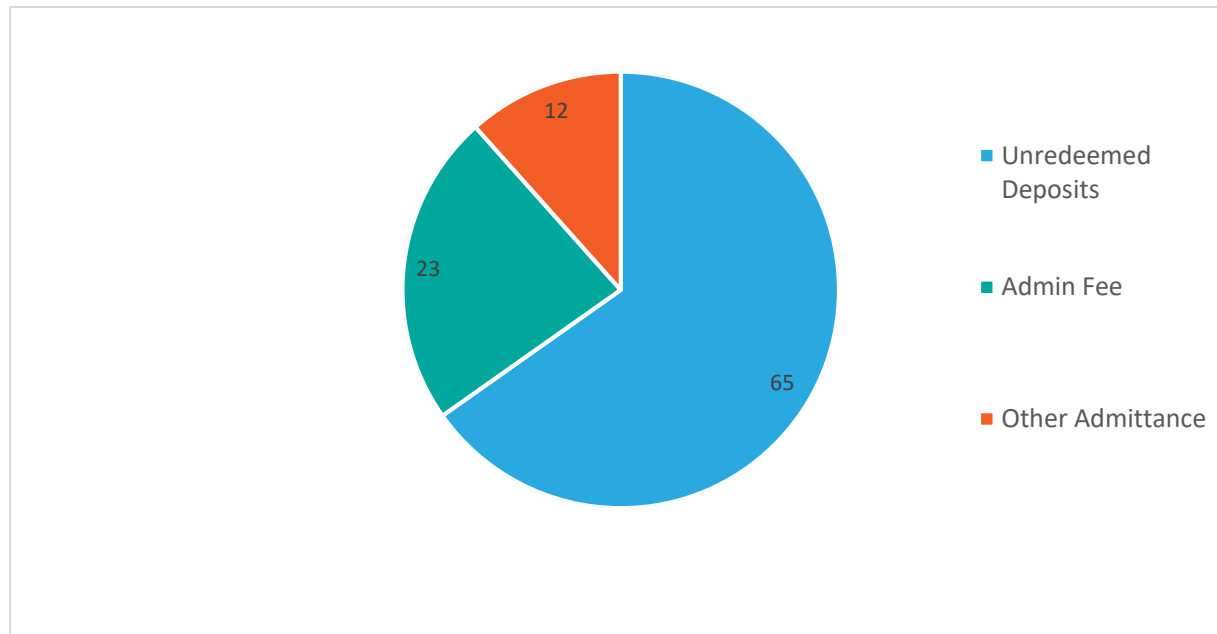
All programs rely, to varying degrees, on unredeemed deposits. The California system relies almost exclusively on unredeemed CRVs. This reliance on unredeemed deposits has the potential to lead to program instability especially when the redemption rate increases. In these instances, the value of the unredeemed deposits goes down yet the cost of operating the system does not substantially change. When the program is achieving high recycling rates, not only does the revenue from unredeemed deposits decrease, but so does the small contribution made by manufacturers through Processing Fees. This means that funding reduces when costs increase; putting further pressure on the program's finances.

Between 2008 and 2015, when recycling rates had been in excess of 80%, the Legislative Analyst's Office reported that there was an average structural deficit of \$90 million each year.⁴⁸ This is not surprising given that the system relies almost exclusively on unredeemed deposits.

⁴⁸ Legislative Analyst's Office (2015) *An Analysis of the Beverage Container Recycling Program. An LAO Report.* April 2015.

In comparison, Norway which has one of Europe's most successful deposit systems, collected 95% of deposit bearing containers⁴⁹. Figure 3-6 outlines how the system is funded (excluding material value for the purposes of comparison with California)⁵⁰.

Figure 3-6: System Cost Coverage in Norway



Source: Infinitum (industry appointed system operator) Data, Norway

Two key interrelated differences between the California system and the Norwegian system are:

- 1) System administration;
- 2) Management of material.

System Administration

Norway's program operates under a CSA model. The CSA, called Infinitum is a non-profit organization that owns and runs the program on behalf the industry. Infinitum's board comprises representatives of the beverage and retail industries. Its purpose is to ensure that the program meets the target capture rate of 95% set in legislation. Failure to meet the target results in additional tax liability for the beverage industry. Infinitum has the ability to put in place the necessary infrastructure and adjust the deposit to ensure the target is met.

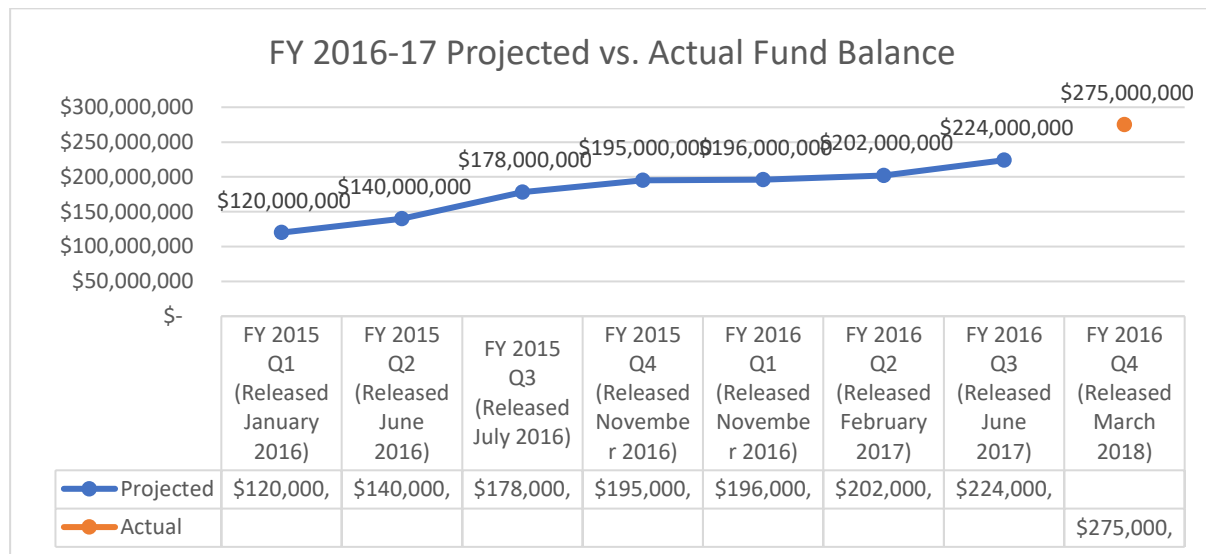
⁴⁹ Infinitum (2017) 2016 Annual Report.

⁵⁰ Infinitum system also manages revenues from the sale of material, these numbers have been excluded for the purposes of providing a like for like comparison with California where material sale is managed by individual recycling centers.

Infinitem is scrutinized by its members to ensure costs are optimal and can adjust the program to do so.

In California, CalRecycle is the CSA and, under the legislation, responsible for meeting the 80% target not the manufacturers, distributors or retailers that produce, deliver and sell beverages to consumers. There is no penalty for the target being missed. The legislation is such that CalRecycle has no ability to influence the redemption infrastructure or deposit level, both key factors that influence return rates. CalRecycle finds it difficult to accurately predict incomes and expenditures this is reflected Figure 3-7 which shows the actual versus predicted fund balance in 2016-17.

Figure 3-7: Actual vs Projected Fund Balance 2016-17



Source: CRI supplied data

Material Revenue

Both the Norway program and the modelled modern US program are based on the central administrator or CSA, also being the material owner. This effectively takes material risk away from the recycling centers, and means the CSA can modify fees paid by manufacturers according to the material sales revenue. Manufacturers are best placed to absorb changes in material values because they are also buying the material from the market. If market prices increase, producers' fees go down.

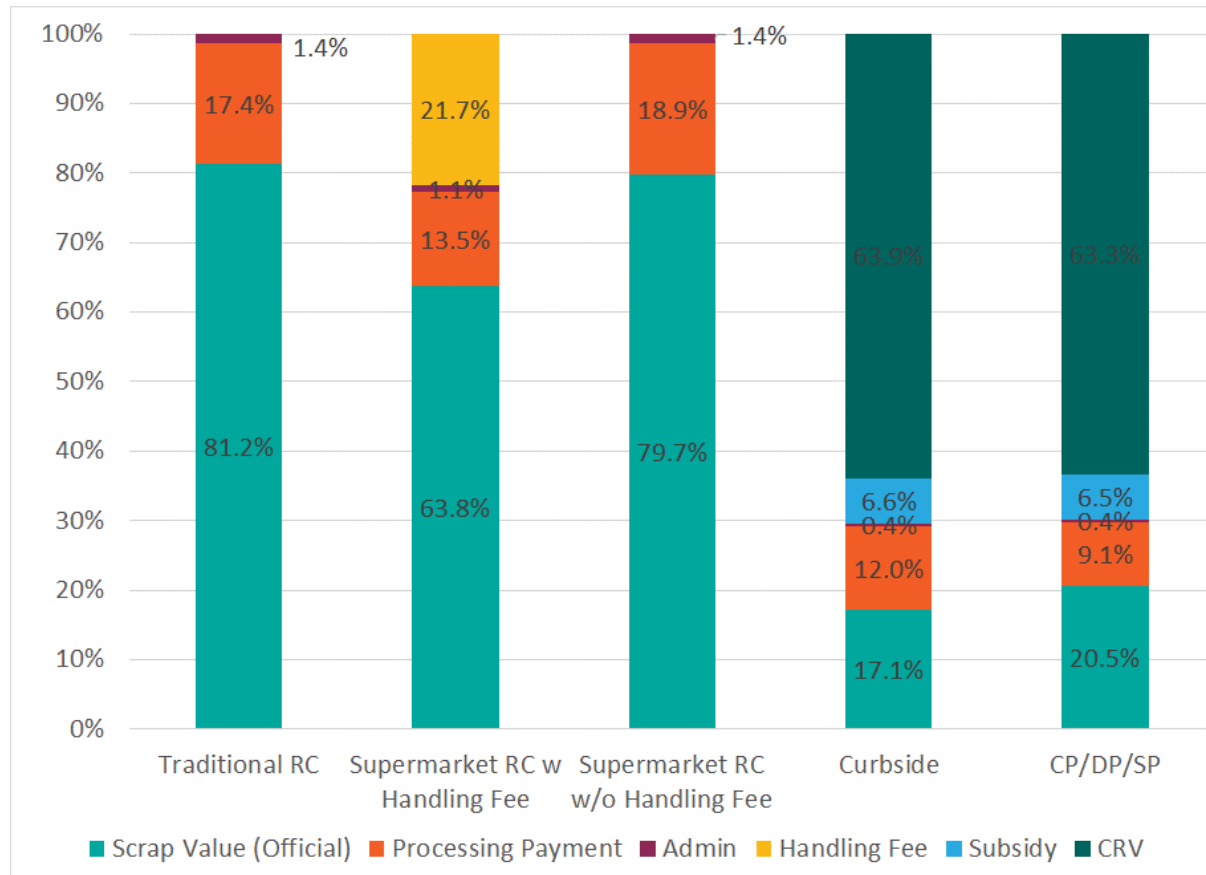
In California, fluctuating market prices, and the inability of the current mechanism for calculating Processing Payments to react quickly to these fluctuations, has been one of the primary reasons for recycling center closures. The extent to which recycling centers rely on, and effectively shoulder the risk of material value, is discussed in Section 3.3.2 below.

The Californian program is unusual in that producers pay virtually nothing towards managing their products at the end of their life, unlike almost all other systems in the US and Canada.

3.3.2 Impact of Scrap Value on Program Stability

We have discussed the importance of convenient redemption infrastructure on program performance. Recycling centers operate on a free market basis in California and as such need to be financially viable. How different redemption options are funded (through the program) and the extent to which each relies on scrap values is depicted in Figure 3-8.

Figure 3-8: Funding of Container Redemption



Source: Eunomia calculation using CalRecycle 2017 Fact Sheet. CP/DP/SP = Curbside Program, Drop-off Program, Supplementary Program

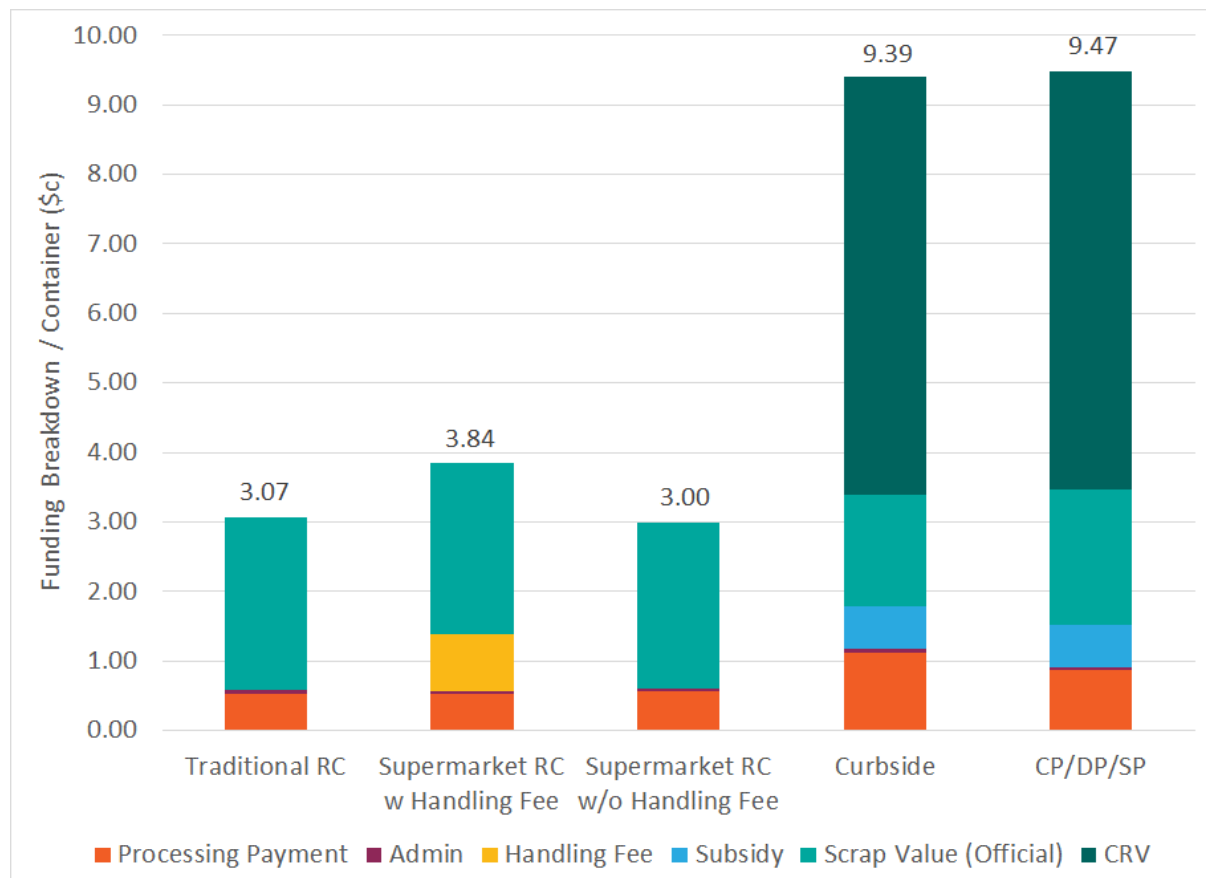
Traditional recycling centers and supermarket recycling centers that do not receive a Handling Fee rely most heavily on scrap values. When 80% of revenue comes from a funding stream which they have no control over, it is inevitable that recycling centers will close when scrap values fall. It seems unfair that those providing the infrastructure that is

essential to the stable functioning of the program have to take the full risk on material revenue.

Redemption centers that receive a Handling Fee are slightly more protected from fluctuating scrap values but not by much.

Curbside and drop-off facilities are least reliant on payments for scrap materials, not only because they receive revenue through municipality payments (not included in Figure 3-8), but also because they receive subsidy payments, discussed further in Section 3.3.3, as well as the CRV. Figure 3-9 shows how much money on a per-container basis each redemption route receives as a result of the deposit program. In addition to the large CRV payment, curbside and drop-off systems also receive, proportionally, more Processing Payments. The reason for this is that recycling centers process proportionally higher quantities of aluminum containers (40% of volume) for which there is no Processing Payment compared to curbside systems (19% of volume).

Figure 3-9: Funding Per Container Recycled through Each Redemption Route



Source: Eunomia calculation, based on data from CalRecycle 2018 Factsheet

The fact that the Processing Payments have proved insufficient for hundreds of recycling centers indicates that the methodology prescribed in The Act is no longer appropriate. A

change in the payment methodology, which recognizes different operating costs will better justify the \$2 million spent on the biennial cost survey. Although the survey gathers good data, how the data is used to calculate an average Processing Payment has a detrimental impact on the program performance as it provides inadequate payments for high cost recycling centers.

So much rests on the value of materials, and the risks associated with this are exacerbated by the time inconsistency of the material revenues and the level of the Processing Payments. Alarm bells regarding the misallocation of material price risk should have sounded, and triggered a response, long ago.

Finally, as the material is not collected on a state-wide basis, scrap values are covering a lower proportion of the costs than they would if they were marketed in bulk.

3.3.3 Adequacy of Processing Payments

There is a clear consensus, one supported by all those we interviewed, that the recycling center closures can be attributed to the nature of how Processing Payments are calculated. Cost surveys are failing as a mechanism for supporting recyclers for the following reasons:

- Processing Payments are based on average results from surveys across all recycling centers. Some recycling centers' costs will inevitably be higher, especially where property costs are higher or return volumes lower.
- The cost survey currently reports on the costs of a failing system where recycling centers are insufficient in number and location to allow for convenient consumer redemption rather than the costs of a successful one.
- As recycling centers drive down costs to meet the constraints imposed by inadequate Processing Payments, higher-cost centers close, resulting in the next survey report showing a fall in costs so payments will be further reduced – forcing a race to the bottom.
- Reasonable Financial Return: The reasonable financial return calculation has additional floors:
 - it fluctuates creating even further uncertainty for operators;
 - only applies to processing payments not handling fee; and
 - is calculated on a recycling costs minus income from scrap material not all operating costs.

It could therefore be argued that it does not represent a reasonable financial return.

- Reconciliation: There is no reconciliation at the end of the year to compensate for any under-payments resulting from unexpected costs or drops in revenue.
- Most critically, the payments depend on a volatile secondary materials market that is not adequately compensated for by the Processing Payment formula. As a result, the

CRI estimates that the cumulative shortfall in glass and PET Processing Payments between 2012 and 2017 was \$62.2 million.⁵¹

- In 2017, the situation was exacerbated by the formula producing a negative Reasonable Financial Return (RFR) of -5.85%, which could not be considered “reasonable”.
- Additional contributing factors include container light-weighting, meaning recycling centers receive less material, comingled rates not reflecting the full deposit when consumers are paid by count, and manufacturing/consumer habits moving away from aluminum cans to PET bottles (for which the processing costs exceed the scrap value, unlike for aluminum).

With more containers littered, landfilled or recycled through sub-optimal alternative systems as a result, these are false economies that do not serve the interests of CalRecycle, consumers or manufacturers.

3.3.4 Impact of Payments on Program Financial Stability

Uniquely, the Californian system funds several different programs on top of the direct infrastructure necessary for consumers to redeem their CRV. The Act includes set sums to be paid from the fund to other programs that assist with container recycling and litter reduction. These are summarized briefly here:

- Other recycling and litter programs
 - \$15 million annually to curbside and drop-off programs, with payments made on a per-container basis (included as subsidy payment in Figure 3-8 and Figure 3-9).
 - \$10.5 million annually for municipal beverage container recycling and litter clean-up activities.
 - \$1.5 million in grants for beverage container recycling and litter reduction programs.
 - \$20.974 million for grants for beverage container litter reduction and recycling programs for certified community conservation corps, with a cost of living adjustment of \$15 million.⁵²
- Material quality

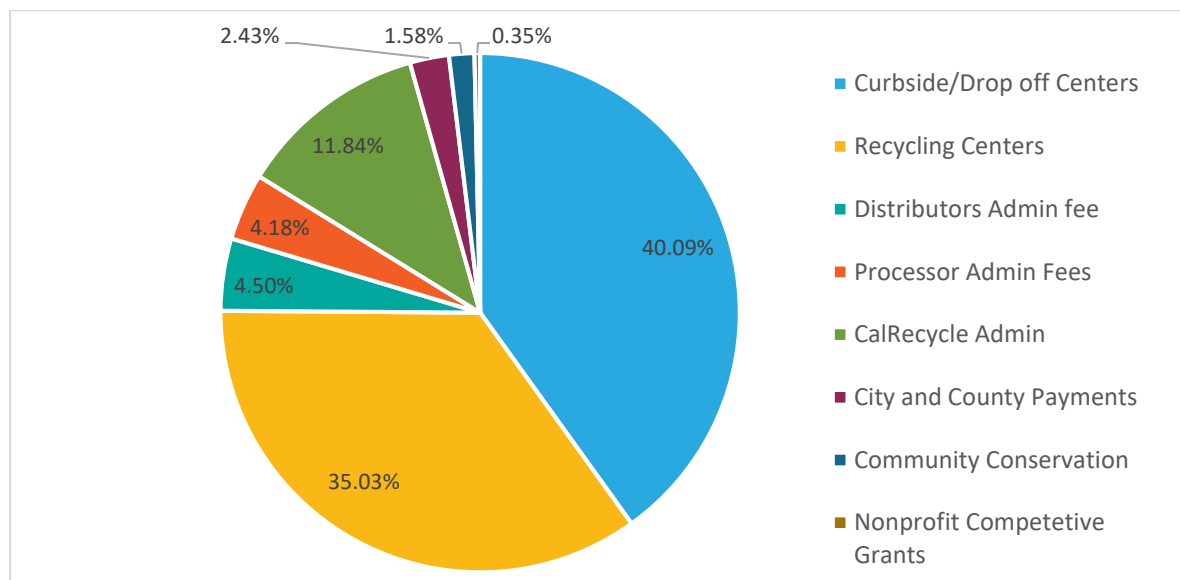
⁵¹ CRI (2017) *The California Redemption Center Crisis – An Opportunity for Innovation*. Webinar, November 8, 2017.

⁵² Additionally, the law provides for a Recycling Infrastructure Loan Guarantee Account within the Fund, so CalRecycle can issue loan guarantees for capital expenditures for new recycling infrastructure. The legislation also states that RVM operators or processors can apply to the California Pollution Financing Authority for financing.

- Up to \$10 million for quality incentive payments to improve the quality of glass bottles collected through single stream curbside or drop-off programs.
- Up to \$10 million for market development payments for empty plastic bottles.⁵³
- Education and engagement
 - Up to \$5 million for statewide public education and information campaigns.

Over 20% of the deposits that are not claimed by either customers or curbside/drop-off programs fund supplementary programs for which there has been no assessment of environmental or cost effectiveness. Figure 3-10 summarizes all program expenditures and shows that payments to recycling centers account for only 35% of all program costs, compared to 44% flowing to curbside/drop-off and other supplementary programs.

Figure 3-10: Program Expenditures



Source: Eunomia Calculation from Data in the 2018 Fact Sheet

It is known and recognized by both processors and beverage container manufacturers that the quality of glass returned to the supplemental programs is not as high, as evidenced by the need for QIPs. Despite this, The Act guarantees the funding pots for the supplemental programs and they receive more funding than recycling centers. A more sensible response would be to increase the program performance target and re-configure the financing of the scheme, so that more containers are returned to recycling centers.

⁵³ This was a temporary provision, with a sunset clause for January 2018.

It is interesting to note that CalRecycle did not use any of the \$5 million allocation for education campaigns in 2017/18.⁵⁴ Neglecting to fund education and awareness is not uncommon in most US systems primarily because, unlike in California, they are not operated on a central system basis. However, the Oregon DRP, which operates through a central organization – the Oregon Bottle Recycling Cooperative (OBRC), owned by the producers, invests at least \$1 million each year in marketing.⁵⁵

3.3.5 Fraud

The success and effectiveness of any DRP is affected by system abuse and errors. This happens when one or more of the following occurs:

- The number of units placed on the market is under-reported;
- There are differences in deposit value and/or scope of containers covered between states, increasing the likelihood of cross-border redemption;
- Not all container types are included in the DRP, and non-deposit bearing containers are refunded;
- There are no mechanisms to prevent units being redeemed more than once; and
- There are no checks on how many containers have been returned.

Fraud is likely in the California system for the following reasons:

- Limited checks to ensure all beverage sales are registered with CalRecycle;
- Redemption is by weight rather than count, increasing the chances of units sold out of state and non-CRV containers being redeemed because they are not individually verified;
- Returns are predominantly manual, so:
 - Barcodes are not used to confirm the container is registered with CalRecycle and was most likely bought in the state;
 - CalRecycle cannot collect real-time data and monitor unusual redemption patterns;
 - Containers are not scanned to check their weight and shape; and
 - Containers are not compacted so they can effectively be redeemed more than once.

⁵⁴ CalRecycle (2018) *California's Beverage Container Recycling and Litter Reduction Program Factsheet*. June 2018.

⁵⁵ Gathered via discussions with OBRC

According to the CRI, beverage sales were under-reported by 129.9 million between 2011 and 2014.⁵⁶ This means that CRVs (at least \$6.5 million) and Processing Fees would have been under-paid and some beverage distributors/manufacturers were gaining an unfair advantage over their competitors. It also potentially means the actual recycling rate is lower than reported.

3.4 Flexibility

The Act details:

- The precise scope of the program, in terms of the types of container and beverage that are included;
- The 80% target (although there are no penalties or consequences if this is missed);
- The level of the deposit or California Redemption Value (CRV); currently \$0.05 for containers < 24oz and \$0.10 for containers ≥ 24oz;⁵⁷
- How and where CRVs are to be refunded, in effect the redemption infrastructure;
- What fees must be paid and how they are to be calculated; and
- Fixed funding for additional programs, including curbside collections.

The prescriptive nature of The Act results in an inflexible program that cannot be adapted swiftly or easily to ensure targets are met or that the system is financially stable and cost efficient. It is a cumbersome legislative process to make even minor changes, with legislators facing political pressure from all sides to support or oppose amendments; decisions that, in other systems, can be easily made by the private organizations responsible for meeting the performance targets. Almost all changes that are necessary to make the program more sustainable in the long term require an amendment to The Act.

Appendix A.2.0 contains details of recent proposed changes to The Act. The fact that there have been many strategies to improve the program that have not succeeded indicates how hard it is to implement improvements and highlights the need to build a strong support base for change. The multitude of overlapping and unsuccessful bills also highlights one of the reasons why DRP designs should not be enshrined in legislation, but need the latitude to evolve and adapt without lengthy, and expensive, legislative processes.

⁵⁶ https://www.newsreview.com/sacramento/recycling-in-the-dumps/content?oid=25473960&utm_source=Sailthru&utm_medium=email&utm_campaign=Issue:%202017-12-07%20Waste%20Dive%20Newsletter%20%5Bissue:13171%5D&utm_term=Waste%20Dive

⁵⁷ The CRV was originally \$0.01 but, following legislative amendments, was increased in 1990, 2004 and, most recently, in 2007. The 2007 change followed AB 3056, which amended The Act to require the CRV increase if the recycling rate was less than 75% in any calendar year from 2006 onwards.

3.5 Fairness and Accountability

3.5.1 Fairness

As shown in and Figure 3-4; if we ignore the CRVs refunded to consumers, the distribution of funds is as follows:

- Recycling centers receive 35.03% of program funding provided through CalRecycle (excluding separately received material revenues) for handling 88% of return the volume, which equates to \$0.009 per container redeemed through recycling centers;
- Curbside and drop-off programs receive 40.09% of program funding for handling 12% of return volume, which equates to an average of \$0.071 per container redeemed through curbside/drop-off centers;
- Distributors receive 4.5% of funds which equates to \$0.0011 per container redeemed; and
- Processors receive 4.18% of funds, the equivalent of \$0.0010 per container redeemed.

The most noticeable point from the above is the relative lack of funding to support infrastructure that allows consumers to recover the CRV, i.e. recycling centers. The current funding mechanism is neither fair to the consumer nor for the recycling centers as they are left exposed to fluctuating material values, as set out in Section 3.3.2.

In the event of insufficient funds, usually caused as a result of high recycling rates, The Act specifies that CalRecycle must reduce all payments from the fund proportionally. This clause was triggered between November 2009 and March 2010, when all payments coming out of the fund, irrespective of their relative importance or rationale for their existence, were cut.⁵⁸ This has a greater impact on recycling centers, as curbside and drop of programs have other, more stable sources of revenue.

The Californian system denies manufacturers the opportunity to control how their product is managed at the end of its life, impeding their ability to provide product stewardship. Other systems, such as that in Oregon, do not simply impose responsibilities on manufacturers, but give them control and influence.

3.5.2 Accountability

Section §14501 (f) of The Act states that the responsibility to provide convenient, efficient, and economical redemption opportunities rests jointly with manufacturers, distributors, dealers, recyclers, processors, and the Department of Conservation.

⁵⁸ Legislative Analyst's Office (2015) *An Analysis of the Beverage Container Recycling Program. An LAO Report.* April 2015.

Under the current system, 93% of the cost of the program is paid for by consumers who either do not want to redeem their containers or do not have access to a convenient recycling center to redeem. Manufacturers contribute just 6% to the cost of the system, retailers only 1%, and distributors are actually funded by the system, through admin fees. In most other systems, distributors contribute to covering the cost of the system in the same way as manufacturers do under an EPR based scheme.

Additionally, neither consumers nor manufacturers have the mechanisms or power to hold CalRecycle accountable for missing targets.

4.0 Options for System Improvement

Section 1.0 sets out the components of an effective, efficient deposit system, and Section 3.0 reviews the system against these components, highlighting the reasons why reform is needed in California. This section presents options for system improvement based on the following scenarios:

- 1) Scenario 1 - Optimizing the current program: Reforms that could be implemented without any change to The Act;
- 2) Scenario 2 - Changes broadly within the confines of the current program, involving minor amendments to The Act and which do not fundamentally change the design of the program;
- 3) Scenario 3 - More substantial amendments to The Act intended to strengthen the program's structural weaknesses and which change the roles and responsibilities of the different stakeholders; and
- 4) Scenario 4 - Redesign: A fresh policy approach to meet, and exceed, the current program goals so as to contribute to a circular economy and design out non recyclable packaging including:
 - a. 90% redemption for recycling target for beverage containers,
 - b. Geographical coverage of sustainable redemption points such that it is as easy for consumers to reclaim their deposit as it is to purchase a beverage; and
 - c. Producer responsibility such that manufacturers, distributors, dealers, recyclers, processors, share responsibility with consumers and the State for high levels of return and recycling and so producers have the operational and financial control to ensure redemption and recycling targets are met cost effectively.

Each recommendation under each scenario is qualitatively assessed against the following key elements of an efficient and effective deposit system:

- **High Performance:** Reliably exceeding the 80% target, and preferably 90%+ which is comparable to the worlds most successful programs;
- **Convenience:** Ensuring it is as easy to redeem an empty container as it is to purchase a beverage;
- **Financial stability:** Providing for program's financial sustainability and delivering value for money;
- **Flexibility:** Allowing for the system operator to easily and quickly make changes to the system to ensure targets are met; and
- **Fairness and accountability:** Both in terms of who pays for the system and in payments to those parties providing the redemption infrastructure.

4.1 Scenario 1: Reforms Requiring No Change to The Act

We have identified a number of changes that we believe can be delivered without any change to The Act. Table 4-1 lists each recommendation, along with the reasoning, the high-level actions that would be required to implement the recommendation, and the anticipated impact.

Table 4-1: Scenario 1 Recommendations

Recommendation S1a	Revise Handling Fee Calculation⁵⁹
Reason:	Current Handling Fee calculation is backward looking and, in most cases, out of date once calculated. It is also based on the cost of operating redemption infrastructure that does not provide convenient redemption opportunities for consumers. Currently only 36% of Convenience Zones are served by recycling centers due to failings in both the Handling Fee and Processing Payments.
Actions necessary to implement revision:	1) Calculate the true cost of operating Handling Fee recycling centers in the CZ to ensure convenient redemption infrastructure using a bottom up approach. This would require: a. An assessment to determine required number of CZs; b. Calculation of operating costs including labor based on minimum wage required, actual lease costs etc.; c. Scenario modelling of material revenue. 2) Determine Handling Fee based on bottom up calculation, which may vary between a rural and urban location; 3) Request annual operating reports from recycling centers to attest Handling Fee calculation.
System Benefits:	The change will:

⁵⁹ 14585(g)(2) permits CalRecycle to “update the methodology and scrap values used for calculating the handling fee from the most recent cost survey if it finds that the handling fee resulting from the most recent cost survey does not accurately represent the actual cost incurred for the redemption of empty beverage containers by those certified recycling centers”.

	• Increase the likelihood that Handling Fee recycling centers can stay in operation and may mean more convenience zones will be served. • Increased convenient redemption should increase program performance. Increasing the recycling rate and the Handling Fee will increase the Fund costs and reduce its revenue from unredeemed deposits, putting further pressure on the system's stability.
Stakeholder Impact:	Increased payment will be supported by recycling centers that currently receive Handling Fees, but not necessarily by others. Pressure on system funding would require amendments to other parts of The Act to plug any funding gap. This could be through reduced funding to supplementary programs (Recommendation S1c), which could be done under this scenario. More substantial amendments related to funding from manufacturers can only be delivered through major reform, included in Scenario 3.
Recommendation S1b	Assess the potential to designate additional areas as a rural region⁶⁰
Reason:	A "rural region" is identified pursuant to Section 14571 of The Act. If more areas are designated as rural, more recycling centers could potentially be eligible for Handling Fees and the higher Processing Payments (if retained), which would reduce the likelihood of closures in rural areas.
Actions necessary to implement revision:	1) Review current areas designated as rural and determine if other areas have populations of between 10,000-50,000.
System Benefits:	The change will provide additional funding for recycling centers in the newly designated rural areas, potentially preventing closures and leading to increased convenience if businesses decide to open new recycling centers in these areas.

⁶⁰ 14588.1(c) allows CalRecycle to designate areas with a population of 10,000-50,000 as a rural region "unless the area is identified as part of, or associated with, an urban area, as determined by the department on an individual basis."

Stakeholder Impact:	The change would increase system costs. This would either deplete the existing surplus or require a reduction in funding in other elements of the system, such as supplementary programs, where CalRecycle has the authority to do so.
Recommendation S1c	Review cost effectiveness of supplemental programs and stop payments that are ineffective
Reason:	The Act states that CalRecycle “may” spend money on the programs listed in Section 3.3.4. Where CalRecycle has latitude to do so, it could be argued that funding should be reduced to supplemental programs when recycling centers are closing due to lack of funds. Funding should be based on the benefit delivered to the program in terms of maximizing the units redeemed and ensuring consumers are able to recover their CRV. This recommendation was also made in the Legislative Analyst’s Office report in 2015⁶¹ but not implemented.
Actions necessary to implement revision:	1) Carry out a study to calculate the cost effectiveness of each supplemental program 2) Determine which funding pots should be suspended because they are less cost-effective than recycling centers.
System Benefits:	Retains more money in the fund, which could be used to cover additional costs associated with any changes to Handling Fees. Increased stability of the Program if the fund has adequate reserves even when redemption levels are high.
Stakeholder Impact:	Cities and counties would be opposed to this; curbside programs would oppose reductions and glass bottle manufacturers could be concerned about the impact on quality if the QIP is removed while a significant proportion of glass is returned through curbside collections – indicating the need to increase the numbers returned to recycling centers through more wide-ranging reforms.

⁶¹ Legislative Analyst’s Office (2015) *An Analysis of the Beverage Container Recycling Program. An LAO Report.* April 2015.

Recommendation S1d	Review convenience zone exemptions
Reason:	There are currently 1,215 unserved zones (32% of all zones). This is in addition to a further 1,024 exempt zones, meaning that only 36% of zones are served.⁶² It could be argued that the zones are incorrectly sized but, even if this is the case, with only 36% of zones served there is reason to review why zones have been exempt when recycling rates are falling due to lack of convenient return infrastructure.⁶³ Revoking and denying any exemptions would in theory mean more CZs are served.
Actions necessary to implement revision:	1) Review again the exempt zones to ensure that they still meet one or a combination of factors set out in clause §14571.8. 2) Notify any supermarkets in zones that no longer meet the exemption criteria that redemption infrastructure is required in the timescales set out in §14571.8.
System Benefits:	More zones serviced, increased convenience for consumers and therefore increased ability to recover the CRV.
Stakeholder Impact:	Supermarkets required to ensure redemption in previously unserved zones likely to object.
Recommendation S1e	Increase scrutiny on grocers under Options A and B in unserved zones
Reason:	Need to ensure that Option A grocers are taking back and that they are notifying consumers that they can return to retail. It is also not clear if all potential Option B revenues are being collected.
Actions necessary to implement revision:	1) Review resourcing currently assigned for inspections; 2) Set rolling program for inspections that ensures all retailers in unserved zones are inspected over defined timescale; and 3) Publicize retailer take back requirements in unserved zones.

⁶² Correspondence from CalRecycle received on 10/23/18

⁶³ SB 102 https://leginfo.ca.gov/faces/billStatusClient.xhtml?bill_id=201720180SB102

System Benefits:	This is fairer to grocers already taking back or paying the Option B fee, and will improve consumer convenience if consumers in unserved zones can return their containers while they do their shopping. This would not, however, help in rural areas and retailers would not be compensated for their costs, so will not be incentivized to provide a high-quality service.
Stakeholder Impact:	Increase cost of inspections should be offset with greater income and potentially more grocers paying under Option B. Greater requirement on Option A grocers to advertise take back and to manage units within the store and arrange for pick up.
Recommendation S1f	Strengthen border checks and manufacturer/ distributor audits
Reason:	Currently limited resourcing in place to verify: • The number of units sold in the State; • The level of cross-border fraud in the system; or • The used containers returned for a refund.
Actions necessary to implement revision:	1) Allocate money from Fund to: a. Investigate system fraud so as to identify appropriate mitigation measures; b. Require specific reporting from manufacturers and distributors and audit biannually.
System Benefits:	Reduce the risk of CRVs not being paid into the Fund or Processing Fees being evaded, and should help to improve the reliability of CRVs being paid out, ultimately helping the financial stability of the system.
Stakeholder Impact:	Levels the playing field for manufacturer and distributors. Cost for manufacturers should be covered by current Admin Fees. However, both parties are likely to be concerned if reporting is overly bureaucratic.
Recommendation S1g	Review commingled rate

Reason:	Paragraph 14549.5 requires CalRecycle to set the commingled rate annually, or more frequently if CalRecycle considers it necessary. ⁶⁴ It is understood that the rate paid to curbside currently includes thermoformed containers, which cannot be used by PET flakers. Excluding these from the commingled rate would reduce CalRecycle's CRV payments and improve the quality of PET sold to processors.
Actions necessary to implement revision:	1) Require curbside and drop-off programs exclude thermoformed containers from their reporting and demonstrate that they are doing so through compositional analysis.
System Benefits:	Could mean that recycling centers paying consumers by count are reimbursed at a more appropriate level, that CalRecycle is paying for fewer non-CRV containers and that the quality of material collected improves.
Stakeholder Impact:	Some recycling centers will support, while some CRV centers and curbside programs may oppose if the rate reduces. Consumers paid by weight may not be paid as much.

4.2 Scenario 2: Minor Legislative Amendments

To reliably increase return rates and/or address the weaknesses detailed in Section 3.0, the legislature and governor will need to amend The Act. Scenario 2 considers relatively minor amendments, similar in magnitude to the bills proposed in recent years. Reforms in this scenario are not intended to fundamentally change the program design or structure, but address specific system pressures in isolation.

Table 4-2: Scenario 2 Recommendations

Recommendation S2a	Increase the CRV to incentivize higher return rates via recycling centers [Paragraph 14560(a)(3)].
Reason:	The level of the CRV no longer provides a sufficient financial incentive to encourage redemption rates in excess of 80%. ⁶⁵

⁶⁴ To do this, CalRecycle would consult with curbside and collection program operators and hold a public hearing at least 60 days before the new rate would come into effect.

⁶⁵ Michigan's \$0.10 deposit for all containers is linked to its 92% recycling rate.

	CRV increases in the past have been followed by an increase in California's recycling rate. Recycling centers need to increase across both rural and urban areas prior to this being implemented to ensure consumers can conveniently recover the CRV. The recommendations in Scenario 1 will not, by themselves, do this as they do not address Processing Payments.
Actions necessary to implement revision:	1) Calculate the likely increase in recycling rate resulting from an increase in CRV through regression modelling or review of other systems which have recently increased the level of deposit, such as Oregon. 2) Stakeholder consultation. 3) Draft bill.
System Benefits:	This would increase volumes returned to recycling centers, supporting their financial viability. Increasing the proportion of containers returned to recycling centers, relative to curbside programs, will improve the quality of material collected. It will increase the total number of containers returned, improving the program performance. The higher CRV would increase the value of unredeemed deposits in the fund, improving its financial stability. This would need to be assessed alongside the expected increase in the return rate.
Stakeholder Impact:	Previous increases have attracted sufficient support to be passed. Grocers and distributors may be concerned about the impact on cash flow. If not combined with measures to improve convenience, it would effectively be a tax for consumers who cannot access recycling centers.
Recommendation S2b	Revise Processing Payment Calculation

Oregon increased its deposit from \$0.05 to \$0.10 in April 2017 and saw its recycling rate increase from 65% in the first three months of the year to 82% between April and December.

Reason:	Recycling centers rely on Processing Payments; however, recycling centers are closing due to a number of factors, including: the reflective nature of the Processing Payment calculation; the calculation being based on a sub-optimal number of recycling centers; and the inability for CalRecycle to amend Payments more frequently than every 3 months. The Processing Payments are also currently paid to curbside and drop-off programs, which is not standard in other systems. Reducing frequency of the cost survey to every 5 years [14575 (c)(1)] compared with every 2 years will save CalRecycle \$3m per survey. As surveys are based on a calculation that does not support convenient recycling centers, reducing the survey frequency will unlikely impact on system performance. Fixing the reasonable rate of financial return will provide some level of stability in the short term. The COLA will be retained and, as a minimum, should be required to reflect the scheduled increases to the minimum wage, set until 2023.⁶⁶
Actions necessary to implement revision:	1) Carryout an assessment to determine a Processing Payment calculation methodology that will support optimum level of recycling centers.
System Benefits:	Stabilizes cycling center infrastructure to ensure convenience for consumers.
Stakeholder Impact:	Support by recycling center operators. Curbside and Drop-off program operators unlikely to want to relinquish income.
Recommendations S2c	Increase proportion of Processing Payments covered by Processing Fees.
Reason:	Required to level to address the imbalance of program funding. Currently 10% at the 75% recycling rate [14575 (e)(1)]. This would support EPR more.
Actions necessary to implement revision:	Carryout an assessment to determine revised bands for different levels of recycling and to ensure that when program has high redemption rates and revenue from unredeemed deposit there is no shortfall I the fund to pay redemption infrastructure.

⁶⁶ https://www.dir.ca.gov/dlse/SB3_FAQ.htm

System Benefits:	Increase fund financial stability Greater producer responsibility.
Stakeholder Impact:	Manufacturers are likely to oppose as increases their costs without giving them more control.
Recommendation S2d	Amend proportional reduction clause
Reason:	If there are insufficient funds available, this amendment would enable CalRecycle to prioritize funding on the basis of evidence and the impact on the success of the program, rather than cutting all expenditures regardless of their importance. This recommendation was also made in the Legislative Analyst's Office report in 2015. ⁶⁷
Actions necessary to implement revision:	1) Assess contribution of programs to the program goals 2) Draft revised clause to give CalRecycle flexibly to reduce funding on the basis of effectiveness.
System Benefits:	Would protect funds for recycling centers rather than imposing a sudden and significant funding reduction that threatens their viability.
Stakeholder Impact:	Supplemental programs will feel at risk only if they cannot demonstrate their cost effectiveness.
Recommendation S2e	Remove clause [14585(a)(4)] giving priority to high-volume recycling centers if there are insufficient funds in the Handling Fee account
Reason:	High volume recycling centers are more financially stable than low volume centers and as such less at risk of closure if funding is reduced. More likely to impact rural areas where volumes are lower.
Actions necessary to implement revision:	Remove clause.

⁶⁷ Legislative Analyst's Office (2015) *An Analysis of the Beverage Container Recycling Program. An LAO Report.* April 2015.

System Benefits:	Fairer on all recycling center operators especially rural sites that have lower volumes. Reduced likelihood of small volume recycling centers closing as such maintaining level of consumer convenience
Stakeholder Impact:	Unlikely to have much opposition except from larger recycling center operators.
Recommendation S2f	Remove administrative fees for distributors [14574 (a)(1)]
Reason:	Distributors' role in the supply chain means they share some responsibility for containers sold to consumers.
Actions necessary to implement revision:	1) Consult with distributors 2) Amend clause
System Benefits:	Will increase the value of unredeemed deposits in the fund, consequently increasing fund stability.
Stakeholder Impact:	Distributors are likely to oppose despite it being hard to argue against the point that they contribute to containers being in the environment. They are more likely to accept if manufacturers are being asked to cover costs as set out in recommendation S3c.

4.3 Scenario 3: More Comprehensive Legislative Amendments

The amendments proposed in Section 4.2 are intended to address some of The Act's weaknesses, but they do not address the program's fundamental shortcomings. Consequently, Scenario 3 involves amendments that alter some of the relationships, stakeholder roles and infrastructure. These are considered to be the minimum required to address key structural and financial issues, and necessary to deliver on the wider objectives set out in Section 1.0, which are necessary for long term stability. Some of the recommendations are in addition to scenario 2 recommendations such as S3b increase scope, whilst others supersede them, S3e - new processing fee calculation replaces S2d.

Table 4-3: Scenario 3 Recommendations

Recommendation S3a	Remove payment of CRV to redemption routes where the CRV is not passed through to the consumer.
Reason:	\$123.70m in CRVs was paid to curbside, collection and drop-off programs in 2017. This money was not passed back to the consumer. In all other systems, the CRV is only returned to the consumer or redeemer, with all unredeemed deposits used to support the primary redemption infrastructure.
Actions necessary to implement revision:	Carry out an assessment to ascertain what impact removing the CRV would have on existing curbside and drop-off programs. Amend §14573.5. (a) such that redemption routes which do not pass the CRV back to the consumer are not eligible for the refund value.
System Benefits:	Increases revenue to the fund by 30%, which will improve its stability, enabling it to better support convenient recycling centers and build reserves.
Stakeholder Impact:	Significant opposition from operators of curbside programs. Assessment of impact will help ascertain any potential phasing of such an approach, including risk mitigation measures.
S3b	Stop Processing Payments to curbside and drop off programs
Reason:	No other program provides funding to curbside programs. Diverts funding from recycling centers that produce higher grade material.
Actions necessary to implement revision:	Revise clause
System Benefits:	Benefit to fund stability.
Stakeholder Impact:	Curbside and drop off programs likely to oppose.
Recommendation S3c	Increase beverage scope to include wine and spirits and cartons, aseptic boxes and pouches

Reason:	Wine and spirits include an additional 1.2 billion containers⁶⁸ Cartons, aseptic boxes and pouches include an additional 2.6 billion containers annually.⁶⁹ Recycling centers need to increase across both rural and urban areas prior to this being implemented to ensure consumers can conveniently recover their CRV.
Actions necessary to implement revision:	1) Modell impact of the additional units on program revenue and expenditure 2) Draft bill amendment 3) May need more robust fraud prevention measures, as there is a greater risk with imported wines and spirits.
System Benefits:	Helps remove glass from curbside programs. Increases the environmental impact of the program by increasing the redemption and recycling rate of these containers.
Stakeholder Impact:	Recycling centers benefit from the increased volume and Processing Payments. Equitable for manufacturers by including all beverage types and container materials.
Recommendation S3d	Make CalRecycle the material owner
Reason:	Recycling centers are unfairly shouldering all material risk and the system is unable to respond quickly enough to increase payments to mitigate these risks. As demonstrated in Figure 3-8, Figure 3-5: System Funding 80% of a recycling center's income is from material sales. If CalRecycle owns the material, it will attract higher market values due to the volume – reducing the program costs to be funded by beverage manufacturers. If it is managing material sales, it can better predict when unredeemed deposits will no longer be able to cover payment to recycling centers

⁶⁸ Container Recycling Institute (2017) *2015 Beverage Market Data Analysis*.

⁶⁹ Container Recycling Institute (2017) *2015 Beverage Market Data Analysis*.

	and pass through those costs to manufacturers as set out in recommendations S3e below. If managed centrally, reserves can be built up when market prices are high to protect payments to recycling centers when market prices are low - reducing the impact of market peaks and troughs on program performance.
Actions necessary to implement revision:	The transition would be complicated and would require CalRecycle to increase its internal skills, knowledge and capability. This proposal would require amendments to the Bill in respect to how recycling centers are funded as they would no longer be taking the risk on scrap value. In the first instance, CalRecycle may wish to procure the services of processors. CalRecycle is likely to be able to negotiate contract terms that facilitate greater risk share than individual recycling centers.
System Benefits:	Greater financial stability of the fund in general. More stable recycling center network as costs will be covered through CalRecycle payments, enabling recycling centers to plan for the long-term and customer related improvements.
Stakeholder Impact:	Processors unlikely to want to give up their role in the system and potentially lose revenue. Those recycling centers that also have processing capacity may lose some of their competitive advantage.
Recommendation S3e	New Processing Fee Calculation (\$14575)
Reason:	Although the Act requires manufacturers to contribute to convenient redemption opportunities, this is not reflected in the mechanism for calculating their contribution. Manufacturers are currently only covering 6% of system costs. When recycling rates increase and the revenue from unclaimed deposits decrease, there is greater pressure on the program. It is therefore intuitively wrong that Processing Fees simultaneously reduce, as this puts further stress on program stability. Manufacturers should pay a fee, calculated annually to cover any deficit in the fund. This fee should be based on supporting a network of recycling centers at geographic locations to ensure the 80% target is met, without the inclusion of containers collected through curbside and drop-off programs.

Actions necessary to implement revision:	Revise Processing Payment mechanism to: $\text{Processing Fee} = (\text{Total cost of program} - \text{unredeemed deposits} - \text{material revenue}) / \text{units sold}$ This should be applied to each container fraction, so there would be different fees for aluminum and glass, etc. based on the value of material associated with the container and also the costs of managing that material.
System Benefits:	Financial stability of the fund in general. More stable recycling center network as costs covered through CalRecycle payments. Fairer allocation of costs, which are currently unduly levelled at the consumer due to heavy reliance on unredeemed deposits. Fund will never be in deficit. Greater product stewardship from manufacturers.
Stakeholder Impact:	Manufacturers unlikely to want to contribute more to a system, especially when they have no control over how their funding is used. Even so, it will provide an improved supply of high-grade recycled material to meet minimum recycled content commitments, and support other environmental commitments, such as reducing greenhouse gas emissions.
Recommendation S3f	Replace Handling Fees and Processing Payments with a single new recycling point (recycle center and retailers) payment based on a per unit verified cost.
Reason:	Currently, Handling Fees and Processing Payments are not sufficient to support convenient redemption. Two mechanisms to effectively deliver one outcome is unnecessarily complicated and administratively time consuming. A new single mechanism is likely to have to recognize differences in high and low volume centers and potentially rural and urban locations, although this would need to be carefully tested. Under a system in which the system administrator, CalRecycle, owns and markets the materials then the Handling Fee could also reflect any processing that the recycling center carries out to increase the value of that material, or equipment they put in place to reduce fraudulent

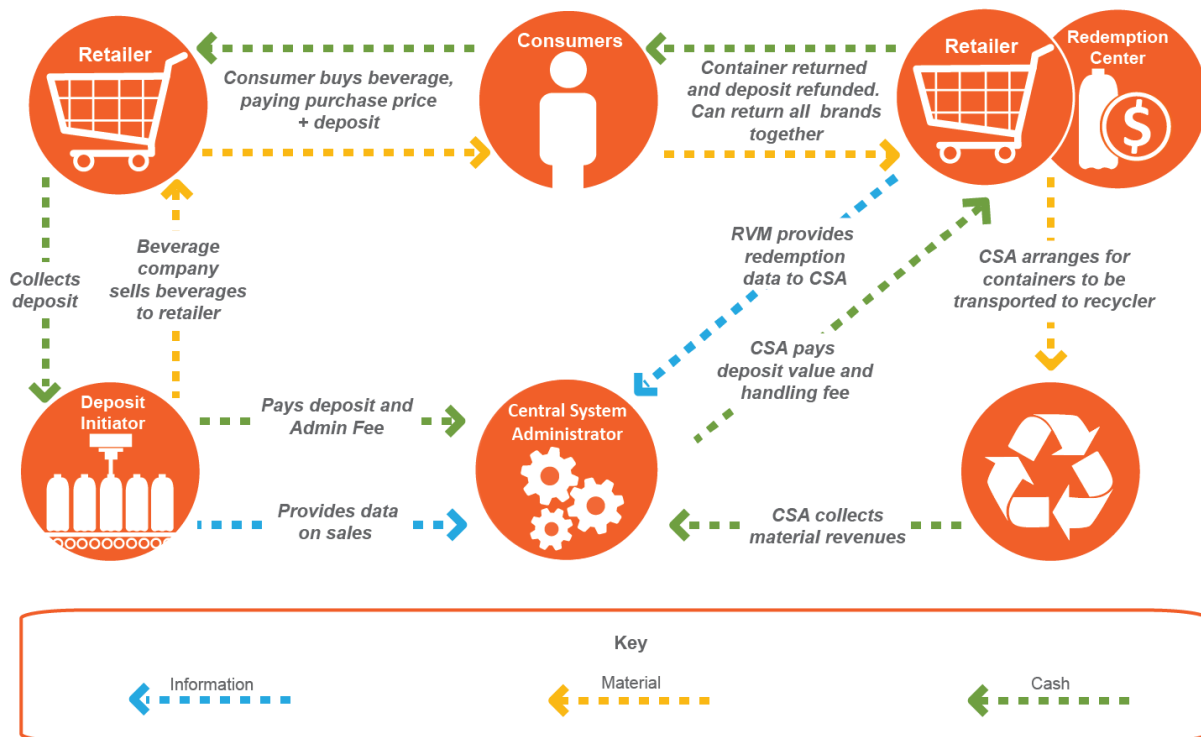
	redemption such as electronic bar code counting machines or Reverse Vending Machines (RVMs) which count, verify and crush units.
Actions necessary to implement revision:	Carry out an economic assessment of the necessary level of recycling center payments to ensure convenient recycling infrastructure that can deliver 80%+ redemption for recycling rates.
System Benefits:	All recycling centers treated the same, therefore fairer. Will increase payments to non-Handling Fee recycling centers, making them more financially viable and helping to prevent closures Less complicated and easier to administer.
Stakeholder Impact:	Significant opposition from operators of curbside programs. Assessment of impact will help ascertain any potential phasing of such an approach and risk mitigation measures.
Recommendation S3g	Include clauses and incentives to mitigate fraud
Reason:	Currently there is no electronic verification of units returned. Payment by weight option increases the potential for out-of-state containers and also out of scope containers to be redeemed.
Actions necessary to implement revision:	Require all units sold in the market to carry state-specific barcodes. Require all units redeemed to be verified via barcode recognition either at the point of redemption or through central counting machines at processors.
System Benefits:	Recycling centers and retailers will be paid per unit redeemed which is greater than the payment by weight option. Manufacturers could be encouraged to have state-specific barcodes through a reduced processing fee. Greater transparency for CalRecycle on system performance.
Stakeholder Impact:	Will increase the costs initially of the system but will allow payments to recycling centers etc. to be based on actual units redeemed and will help illuminate fraud, which is currently an unquantified cost to the program.

4.4 Scenario 4: Re-designing California's Program

The prescriptive nature of the current Act necessitates the number of amendments required under Scenarios 1 – 3. The likelihood of these amendments being agreed, based on experience of past proposed amendments, seems unlikely. Scenario 4 offers the basis for reforms based on the premise that California repeals The Act and sets out to deliver a best practice industry led DRP scheme, adapted for the Californian context.

Figure 4-1 sets out the broad outline of a program that does not rely to such an extent on unredeemed deposits, but is based on the original intent of The Act: to supply convenient, efficient, and economical redemption and achieve a high target, with responsibility resting jointly with manufacturers, distributors, dealers, recyclers, processors, and the Department.

Figure 4-1: Design of an Industry Led, Central System Administrator DRP



A replacement Act should be significantly less prescriptive and place the onus on achieving redemption and recycling rates on those parties that manufacture, distribute and sell beverages to consumers.

Table 4-4 sets out the broad principles and benefits of an industry, rather state-owned system.

Table 4-4: Industry Led Deposit System for California

Principle	Details	Benefit
Governance	A light touch approach to what is included in legislation, with the focus on: 1) setting and enforcing a redemption and recycling target; 2) establishing need for continuous improvement, putting in place mechanisms for the industry to adjust the level of deposit if redemption and recycling targets are not being achieved for an agreed set consecutive number of years and ensuring that that consumers can conveniently redeem containers. 3) establishing the role of government as one of audit, oversight and enforcement.	The fewer details in the legislation, the more flexibility the program is to external market factors, change to system do not require political approval. Responsibility of the program relies with those parties that are best placed to put in cost effective solutions Change can happen more quickly
EPR	Manufacturers, distributors and retailers can delegate responsibility for compliance to a non-profit Central System Administrator, which would act on behalf of the whole supply chain through collaboration. Board of representatives holds the CSA to account. CSA retains unredeemed deposits and material revenues to off-set costs. Industry determines the mechanism for members to financially support the program. Costs to members could vary according to: • Type of organization: retailers have less of a responsibility compared to manufacturers so should cover less of the costs, they may also play a role in redemption, which would further reduce an obligation to provide funding; • Beverage container material: aluminum has a higher material value than glass and, as such, provides a greater contribution to the system's funding. Manufacturers of beverages in aluminum	Stakeholder interviews indicated that some beverage manufacturers recognize the benefits of a DRP in terms of the high-quality outputs, but are deterred by the government's involvement. This gives manufacturers control over the system and how their money is spent. Allows manufacturers to control the recycled material through which they can satisfy commitments to recycled content.

Principle	Details	Benefit
	cans should therefore not have to pay as much as manufacturers of drinks in glass bottles. - Recyclability: Beverage containers that are easier to recycle (e.g. are made from one single material) reduce costs to the system and so manufacturers of these products should pay less. This also encourages them to factor recyclability into designs. - Recycled content: Those containers that contain a significant amount of recycled content attract a lower fee. - State-specific barcodes: Those containers that have state-specific barcodes can prevent fraud and as such reduce system costs associated with fraud. As a result, the fees could be reduced for manufacturers choosing to use a state-specific barcode. A free market driven approach to operational delivery is likely to ensure cost effectiveness and best proactive through competition. This may include the procurement and commissioning of services that will: 1) Deliver redemption infrastructure and options to ensure consumers can conveniently redeem; 2) Offer technology driven solutions that will drive efficiencies in respect to transport and provide transparent and accurate data; 3) Mitigate fraud. Organizations appointed through the CSA, given the responsibility for operational delivery and required to report through Performance Management Indicators achievement and compliance with programs financial, legal, environmental and social goals.	Can provide positive publicity for brand owners, particularly when consumers are increasingly concerned about resource efficiency, littering and marine plastics. Reduces the burden on taxpayers. As CalRecycle will no longer be responsible for the program, they will free up resources to work with municipalities on other litter reduction and recycling initiatives. Due to increased level of performance, the need for supplemental payments to curbside programs would diminish. Manufacturer funding only contributes to high-grade material collections. CSA will run efficiently so as to meet the target, whilst minimizing costs to its members. Program will never run into a deficit. Reduced land and marine litter.

Principle	Details	Benefit
Target Based	Require 90% redemption for recycling rate of listed container and beverage types. Include in act financial penalties if target not met, these can be passed through to manufacturers of packaging that cannot be recycled No fixed CRV. The CSA would instead have the authority set the CRV at a level to ensure the target is met. Verification of target based on electronic counting and verification system rather than weight of material sold.	Removes need for convenience zones because recycling centers or redemption infrastructure will have to be provided at a density and in locations to ensure targets are met. Overall less bureaucracy and more transparent. More flexible to adjust to changes market conditions.
Convenient Redemption	Law requires brand owners to make provision for containers to be returned as conveniently as possible for consumers and minimizing the environmental impact of returning and transporting the containers. Set and enforce convenience targets to ensure geographical coverage. CSA has the flexibility to support return infrastructure through Handling Fees that will ensure the target is met and consumers do not have to travel long distances to redeem. Handling Fees could vary according to: • Volume handled. • Whether the unit has been electronically scanned and verified to prevent fraud and ensure payments are accurate.	Fairer to consumers.

The beverage industry may oppose redesign however, the current system is failing the industry in the following ways:

- Recycling rates, although higher than through a curbside program alone, are not reaching the levels other DRP programs have demonstrated are achievable. Programs in Oregon, Michigan and in many European countries are delivering in excess of 90% return rates. If the California program had achieved a 90% recycling rate for aluminum and PET in 2017, an additional 55,654 tons of recyclable material would have been sold generating revenues of in excess of \$23m, and providing a supply of recycled PET necessary for manufacturers to meet their minimum recycled content goals.
- The program currently operates with an estimated surplus of \$340.9m⁷⁰, yet there are insufficient mechanisms within the Act to ensure that funding supports programs that will deliver high return rates. The Act also allocates funds to supplementary programs for which there has been no assessment of their environmental or cost benefit to the program goals.

Stabilizing the program under the current Act is likely to require greater funding from manufacturers and distributors, as set out in the sections above, without affording them any ability to minimize costs or to divert spending to those programs that will ensure targets are met.

With increasing pressures on brands to take responsibility for their products after the point of sale, so as to mitigate the environmental impacts (particularly in the context of marine plastics), and with brands committing to use more recycled material, an industry-run DRP might actually seem like a relatively easy win. Coca Cola European Partners and Coca Cola Great Britain recently announced support for container deposits and published what they believe the 11 key principles are to a well-designed container deposit system⁷¹ (see Appendix A.3.0 which includes management by one non-profit company controlled by the industry and convenient redemption infrastructure. This commitment pre-empted the European Commission's proposed single use plastic directive, which is likely to pass in

⁷⁰ Project fund balances for the end of FY 2017/18 reported in Q1 statement in the 5 funds are: \$272.4 million in main beverage container recycling account (End of FY 2017/18: \$297.5 million); \$18.8 million in glass account (End of FY 2017/18: \$19.1 million); \$22.4 million in the PET plastics account (End of FY 2017/18: \$18.4 million); \$21.5 million in bimetal account (End of FY 2017/18: \$22.2 million); \$5.8 million in penalty account (End of FY 2017/18: \$6.3 million)

⁷¹ <https://ciwm-journal.co.uk/coca-cola-sets-out-what-a-well-designed-DRP-might-look-like/> accessed 10/26/18

March 2019 and requires 90% of plastic beverage containers to be collected for recycling by 2025 and for PET bottles contain 30 minimum recycled content by 2030.⁷²

⁷² <http://www.europarl.europa.eu/news/en/press-room/20181018IPR16524/plastic-oceans-meps-back-eu-ban-on-throwaway-plastics-by-2021>

5.0 Conclusions and Next Steps

The conclusions from our review and analysis of the current system are as follows:

- **Performance:** The system is underperforming. The return rate to recycling centers for CRV containers is just 66%; the reliance on curbside and drop-off collections boosts the recycling rate, but comes at a financial cost to the system and impairs the quality of material collected. A single container collected through recycling centers costs the fund 0.9c on average, compared to 7.1c through a curbside or drop-off program.

Performance is unlikely to improve when:

- There are insufficient recycling points necessary to ensure it is as easy for a Californian to return and claim their deposit as it is to purchase a beverage; and
- The CRV is not at a sufficient level to act as a financial incentive.
- **Convenience:** The current system as set out in The Act relies on recycling centers operating in designated zones. Currently, only 36% of convenience zones are served. Recycling center closures are a result of:

- Handling fee and Processing Payment mechanisms that are unable to ensure recycling centers across the state can operate profitably;
- Fluctuating scrap values, which are carried by recycling centers;
- Excessive reliance on scrap value to cover operating costs: 80% of a traditional recycling center's costs have to be covered by material income, over which they have no control.

Retail return is necessary to provide the convenience required and although mandated under the current legislation it is not enforced.

- **Financial Stability:**
 - The system relies on unredeemed deposits, which fall when recycling rates increase. 93% of the program is funded through unredeemed deposits, compared to around 65% in high performing systems in Europe.
 - Manufacturers in California fund just 6% the program, far lower than most US Bottle Bill States. Manufacturers' contribution also continues to fall, while program costs increase.
 - The program is effectively funded by consumers who are unable to recover their deposits due to a shortage of redemption options.
 - Unlike any other DRP, curbside and drop-off programs are paid for by the containers that consumers recycle through those programs. In high performing systems, all CRVs unclaimed by consumers are used to cover the cost of the primary recycling infrastructure which, as set out in The Act, is recycling centers. Paying CRVs to curbside and drop-off programs diverts \$123.7m from the program's total revenue stream, which equates to 31%.

They also receive Processing Payments, which should ideally be reserved to support infrastructure that allows consumers to redeem their deposits.

- **Flexibility:** The Act is overly prescriptive, which means that CalRecycle is unable to implement changes to the program to ensure recycling targets are met. CalRecycle cannot, for instance:
 - Ensure that there are enough redemption opportunities;
 - Increase the CRV;
 - Resolve the program's financial instability; or
 - Prevent recycling centers from having to close down.
- **Fairness and Accountability:**
 - 43% of the program's potential funds flow through to curbside and drop-off programs, which contribute just 13.15% of the total volume. 35% flows through to recycling centers that handle 86.85% of the volume.
 - Although The Act places a responsibility on all players to ensure there is adequate recycling infrastructure, the lack of funding and involvement from manufacturers puts pressure on the system's ability to do this.
 - Distributors receive payments from the fund even though they are partly responsible for beverages being sold.
 - When funding is low, the proportional reduction clause in The Act requires CalRecycle to reduce funding to all programs, regardless of the program's effectiveness or contribution to overall performance. This is unfair to recycling centers that handle the majority of containers.
 - Consumers do not have access to convenient redemption locations through which they can redeem their deposits. If consumers are not given the opportunity to redeem their deposits, the CRV risks effectively being a tax rather than a refundable deposit that will increase recycling and reduce littering.
 - It relies on the state government rather than a private enterprise;
 - There is no accountability on CalRecycle to ensure that the target is met; and
 - It does not give brand owners any control over what happens to their beverage containers or the funding they provide.

Currently, the program does not serve the best interests of Californians or brand owners, and it is not delivering the environmental benefits that it could.

5.1 Recommendations for Reform

The reform recommendations set out in Section 4.1 (Scenario 1) to 4.2 (Scenario 2) provide packages of reform measures that, at best, maintain the program at current levels of performance, without addressing the program flaws. They are effectively Band-Aid solutions.

Scenario 3 (Section 4.3) has the potential to provide stability, however it is unlikely to do so due to the number of changes that would be required.

Scenario 4 (Section 4.4) allows industry innovation to drive down costs and drive up performance, while satisfying their producer responsibility obligations and ensuring they have access to high grade material to meet minimum recycled content commitments and contribute to a circular economy.

The extent to which the measures outlined under each scenario contribute to a stable, high performing system is summarized in Table 5-1. A red, orange, green rating has been applied to each criterion so as to score each scenario:

- Red denotes that the criterion has is not met in the scenario.
- Orange denotes that the criterion is partially met in the scenario.
- Green denotes that the scenario will fulfil the objecting in the long term.

Table 5-1: Comparison of the 4 Scenarios against the Current Design

Principles for a Successful System	Current	S1	S2	S3	S4	Explanation
Performance						The program should reliably achieve the 80% target and seek to achieve a target in line with the most successful programs of over 90%.
Convenience						Consumers should have a choice over where to redeem with minimal time and effort.
Financial Stability						Funding streams should be able to be adjusted depending on expenditures.
Flexible						Those responsible for the program's performance and funding should have the authority to change the program as necessary.
Fairness & Accountability						Those operating the system should be held accountable for its results and finances Unredeemed deposits and material revenues should cover the majority of costs, with the remainder covered by manufacturer fees that are set transparently Those taking back containers should be fairly compensated for their costs Compensation is based on contribution to achieving the program goals Program should support EPR and brand owners should be able to use their expertise to improve the system they help to fund

Source: Eunomia Assessment

Although we have set out reforms that can take place with no (Scenario 1), or minor, legislative amendments (Scenario 2), these will not ensure that the program consistently achieves over 80% in the long term and is financially stable. As such, the program effectively has two options:

- 1) Scenario 3: Attempt to meet the program goals through ongoing significant Bill amendments;
- 2) Scenario 4: Throw the operation and system performance requirements over to the industry.

If Scenario 3 was progressed, legislative amendments would first need to stabilize payments to recycling infrastructure. This would be achieved through changes to the Handling Fee and Process Payment calculations, aiming to reduce reliance on scrap values and provide more payment certainty. Further amendments would then be required to stabilize the fund itself. This would be achieved by:

- Ensuring all unredeemed deposits are used to support payments to recycling points where consumers can collect their deposits, this includes retailers, who are currently mandated to provide points of return. These payments must supersede payments to curbside and drop-off programs; and
- Revising the processing fee to make certain manufacturers cover the cost of the program rather than consumers (through unredeemed deposits) and recycling points (through cut backs and closure).

Although Scenario 4 may seem difficult to achieve, passing all the necessary amendments detailed above for Scenario 3, will at best be lengthy, resource-intensive and costly and most likely be impossible, as stakeholder support seems unlikely based on the historic number of failed Bill amendments.

Scenario 4, by definition, would transform the program. It is fully in line with EPR principles, seen in high performing systems in Europe⁷³, where manufacturers, distributors and retailers have established a board and appointed a non-profit CSA, through which they ensure they are compliant with the legislation.

The costs per container recycled through the California DRP is \$0.022. Eunomia has calculated that, in an industry-led system, the cost per container would be half of this at \$0.011.⁷⁴

⁷³ Including Norway, Sweden and Finland.

⁷⁴ Eunomia calculation based on producer-led system in Connecticut.

California’s previous Governor said that any revisions to The Act “should balance three different components”, which are set out below.⁷⁵

- 1) Fiscal sustainability;
- 2) Improved collection; and
- 3) Incentives for innovative recycling.

Scenario 4 is best placed to meet these objectives. In many respects, California is known for its pioneering environmental legislation and action. Choosing Scenario 4 would follow the example the state has set itself, with a world class, outcomes-focused system. Furthermore, the flexible design would mean the legislation itself should not come under continuous scrutiny – allowing legislators to focus on other issues and beverage manufacturers, distributors, and grocers to focus on their businesses. Steps should be taken to set up a stakeholder working group to start to:

- Develop an alternative enabling piece of legislation;
- Produce a roadmap for transition;
- Design the operations model;
- Establish the CSA;
- Transition the program.

⁷⁵ <https://www.gov.ca.gov/wp-content/uploads/2018/09/SB-452-veto.pdf>

Appendix

A.1.0 Key Terms and Program Parameters

A.1.1 Scope of the Program

The program applies to plastic, glass, aluminum and bi-metal containers for the following beverages (an amendment expanded the scope in 2000 to include more non-alcoholic beverages):

- Beer;
- Malt beverages;
- Wine coolers & distilled spirit coolers;
- Carbonated & non-carbonated fruit drinks;
- Water;
- Carbonated & non-carbonated soft-drinks;
- Vegetable juice (containers $\leq$ 16oz)
- Fruit juices (< 46oz); and
- Sports drinks.

In 2015, Californians bought 32.6 billion beverage containers, 28.8 billion of which were deposit-bearing.⁷⁶

A.1.2 Beverage Container Recycling Fund

The Fund is managed by CalRecycle. CRVs are paid into and out of the Fund as summarized below:

- 1) Distributors pay the CRVs into the Beverage Container Recycling Fund, deducting their Admin Fee.
- 2) Recycling Centers refund the CRV to redeemers.
- 3) Processors pay the CRV (plus Admin Fees and Processing Payments) to recycling centers, curbside collectors or drop-off programs.⁷⁷
- 4) CalRecycle reimburses processors.

⁷⁶ Container Recycling Institute (2017) *2015 Beverage Market Data Analysis*.

⁷⁷ Where containers are returned to drop-off or curbside programs, the program operators are paid a commingled rate, set by CalRecycle, on the assumed ratio of CRV-bearing containers to non-CRV containers.

In the event of insufficient funds, The Act specifies that CalRecycle must reduce all payments from the Beverage Container Recycling Fund proportionally. This clause was triggered between November 2009 and March 2010, when all payments out of the Fund, irrespective of their relative importance or rationale for their existence, were cut.⁷⁸

In 2017-18, the unredeemed CRVs, after deducting the Admin Fees, were estimated to total \$260.7 million.⁷⁹

A.1.3 Handling Fees

In addition to the Processing Payments, CalRecycle pays Handling Fees to supermarket site recyclers and rural region recyclers.⁸⁰ The fees are intended to recognize these recycling centers' additional costs due to the higher rents associated with their location, or the higher transport costs, and the reduced volumes that do not allow them to achieve economies of scale. The Act only allows for Handling Fees to be paid to one recycling center per convenience zone. The fees are set by CalRecycle on the basis of cost surveys.

Handling Fees = State-wide weighted average costs of centers that receive Handling Fees – State-wide weighted average costs of centers that don't receive Handling Fees⁸¹

The Fees are paid from the Fund and if the total amount owed exceeds CalRecycle's monthly allocation of funds for Handling Fees, recycling centers with the highest volumes are paid first. The Handling Fee was set at \$0.00833 per container redeemed from July 1, 2018.⁸² In 2017/18, CalRecycle paid \$51.8 million in Handling Fees.⁸³

If retailers do take back any containers – having chosen Option A in an unserved zone, they are not paid any fees, which will contribute to their reluctance to support the program.

⁷⁸ Legislative Analyst's Office (2015) *An Analysis of the Beverage Container Recycling Program. An LAO Report.* April 2015.

⁷⁹ CalRecycle (2018) *California's Beverage Container Recycling and Litter Reduction Program Factsheet.* June 2018.

⁸⁰ Defined in AB 2020 as recyclers in a non-urban area, which is identified by CalRecycle" on an annual basis using the loan eligibility criteria of the Rural Housing Service of the United States Department of Agriculture, Rural Development Administration, or its successor agency".

⁸¹ AB 2020, paragraph 14585(f)(3)

⁸² <https://www.calrecycle.ca.gov/docs/cr/BevContainer/Notices/2018/HandlingFee.pdf>

⁸³ CalRecycle (2018) *California's Beverage Container Recycling and Litter Reduction Program Factsheet.* June 2018.

A.1.4 Processing Fees & Offsets

Beverage manufacturers pay a Processing Fee to CalRecycle to contribute to the Processing Payments. Fees vary accordingly by the type of material and are additionally linked to the recycling rate. The sliding scale means that the proportion of the Processing Payments paid by manufacturers increases as the recycling rate falls (from a minimum of 10% for a 75% recycling rate to a maximum of 30% of the Processing Payment). The rates are listed in A 1 and the Processing Fees for 2018 are included in A 2.

CalRecycle collected a total of \$17.985 million in Processing Fees in 2017.⁸⁴

The remaining proportion of the Processing Payment is covered by CalRecycle through Processing Fee Offsets. These are paid from the Fund and totaled an estimated \$108.5 million in 2017-18.⁸⁵

The intention is to reward manufacturers for higher recycling rates and/or to encourage the use of materials that are more easily recycled. However, manufacturers have no control over the system to increase the recycling rate. There is no economic rationale for the Processing Fee proportions, with incomes falling as costs increase.

Other systems have the flexibility to use higher return volumes to generate efficiency savings and can adjust producer fees to avoid a surplus or deficit.

A 1: Manufacturers Processing Fee - %

Recycling Rate	Proportion of Processing Payment paid by Manufacturers
≥ 75%	10%
≥ 65%	11%
≥ 60%	12%
≥ 55%	13%
≥ 50%	14%
≥ 45%	15%

⁸⁴ CalRecycle (2018) *California's Beverage Container Recycling and Litter Reduction Program Factsheet*. June 2018.

⁸⁵ CalRecycle (2018) *California's Beverage Container Recycling and Litter Reduction Program Factsheet*. June 2018.

≥ 40%	18%
≥ 30%	20%
< 30%	65%

A 2: Manufacturer Processing Fees per Container Sold, 2018

Material	Processing Fee
Aluminum	N/A
Glass	\$0.00283
Plastic - PET	\$0.00045
Plastic - HDPE	\$0.00384
Plastic - PVC	\$0.02248
Plastic - LDPE	\$0.01124
Plastic - PP	\$0.04912
Plastic - PS	\$0.00206
Plastic - other	\$0.08716
Bi-metal	\$0.03457

<https://www.calrecycle.ca.gov/docs/cr/bevcontainer/bevdistman/Resources/RateHistory.pdf>

A.1.5 Processing Payments

CalRecycle pays Processing Payments to recyclers when the scrap value of the returned containers is not high enough to cover their costs. The current Processing Payments, effective from June 1, 2018 are shown in Table A 3.⁸⁶

⁸⁶ There is no Processing Payment for aluminum cans as the value is higher than the costs.

CalRecycle commissions a survey every two years to determine recycling centers' average costs. The retrospective nature of the cost survey means that the Processing Payments set by CalRecycle in July 2018 were based costs in the 2016 calendar year.⁸⁷

The formula allows for a Reasonable Financial Return (RFR), based on profits in the scrap and waste materials industry, according to the Dun and Bradstreet Standard Three Year Norm Report.⁸⁸ The scrap values are determined by CalRecycle based on reports from processors for the 12-month period ending 3 months before the Payments are set.

The Payments are adjusted annually to allow for a cost of living adjustment (COLA).

Consequently, the formula for calculating the Processing Payments =

$$\text{Cost of Recycling} \times \text{COLA} \times \text{Reasonable Financial Return} - \text{Scrap Value}$$

The Act allows for CalRecycle to adjust the Processing Payments no more frequently than every three months if the state-wide scrap value for the 12 months preceding the previous quarter is 5% higher or lower than the average scrap value used currently. This is on condition that changing the payment levels is considered necessary to achieve the 80% target and there are available funds.

Processing payments are paid to certified recycling centers, curbside collections and drop-off programs for every CRV container they collect. In 2017, CalRecycle paid \$111.043 million in Processing Payments.⁸⁹

A 3: Processing Payments - June 1, 2018

Container	Urban Processing Payment	Rural Processing Payment
Aluminum	N/A	N/A
Glass	\$0.05971	\$0.06236
Plastic - PET	\$0.13467	\$0.14572
Plastic - HDPE	\$0.21555	\$0.22990
Plastic - PVC	\$0.38443	\$0.40702

⁸⁷ CalRecycle (2018) *2017 Processing Fee and Handling Fee Cost Surveys*. Contractor's Report by Crowe Howarth LLP. June 2018.

⁸⁸ CalRecycle (2018) *2017 Processing Fee and Handling Fee Cost Surveys*. Contractor's Report by Crowe Howarth LLP. June 2018.

⁸⁹ CalRecycle (2018) *California's Beverage Container Recycling and Litter Reduction Program Factsheet*. June 2018.

Plastic - LDPE	\$0.70301	\$0.73522
Plastic - PP	\$0.61478	\$0.64368
Plastic - PS	\$0.35516	\$0.37306
Plastic - other	\$0.42784	\$0.44746
Bi-metal	\$0.38769	\$0.40578
The Payments set in January 2018 were increased in June for PET and HDPE (due to a fall in prices between April 1, 2017 and March 31, 2018), and reduced for glass (due to the increased scrap value during that period). There is no payment for aluminum because the scrap value exceeds the costs.		

A.1.6 Admin Fees

- Distributors keep 1.5% of the total CRV value they initiate to cover the costs of initiating the deposit and reporting to CalRecycle.
- Recycling centers, curbside and drop-off programs are paid an additional 0.75% of the CRVs they reimburse to cover their administrative costs.
- Processors are paid 1.75% in Admin Fees as they are intermediaries between CalRecycle and recyclers.

In 2017-18, Admin Fees totaled \$46.6 million.

A.1.7 Refund Value per Pound for Recycling Centers

Container	Number of Containers	Refund Value (\$)
Aluminum	28.8	1.570
Glass	1.92	0.102
PET	22.3	1.24
HDPW	6.6	0.57
PVC	11.2	0.56

LDPE	40.8	2.04
PP	8.2	0.58
PS	112.6	5.63
Other	3.2	0.31
Bi-metal	7.3	0.37

Source: CalRecycle 2018 Factsheet

A.2.0 Recent Reform Proposals & Amendments

This section summarizes some of the attempts (successful and otherwise) to amend The Act in recent years.

A.2.1 Beverage Container Recycling: Pilot Projects (SB 458)

Introduced by Senator Wiener, SB 458 was signed in October 2017. It amended The Act to enable CalRecycle to agree up to 5 pilot projects to provide new redemption opportunities for consumers.

It is important to look at alternatives, or supplements, to the existing network of recycling centers but the pilot projects themselves will not fundamentally improve the system for the whole of California, unless they are followed by wider reforms.

A.2.2 Emergency Regulations

These were approved by the Office of Administrative Law in November 2017, to run until May 2018, permitting CalRecycle to use a higher reasonable rate of return of 11.5%, or 16.6% in rural areas.⁹⁰

⁹⁰ The additional 5% given to rural recycling centers was based on an observed cost differential in the 2014 Cost Survey. CalRecycle had originally proposed 6.4% and 11.5% respectively, but stakeholders indicated that these levels were too low.

The increased RFR has provided a temporary reprieve for recycling centers and the higher Processing Payments may prevent some closures but, by definition, the emergency measures will not deliver a long-term solution.

A.2.3 Legislative Analyst's Office⁹¹

The Legislative Analyst's Office (LAO) review in 2015 suggested options to reduce the deficit. The report's main recommendations related to changes to the supplemental programs and transferring processing costs to consumers by either:

- Phasing out processing fee offsets over several years; or
- Introducing a market-based EPR system that requires manufacturers to purchase containers from the California recycling market (based on the weights they place on the market and the return rate) and ensure they are recycled;

The recommendations would help to prevent structural deficits, and the market-based solution would transfer the materials price risk to manufacturers, but little progress has been made with this. Internalizing the waste collection costs of used beverage containers, as proposed by the LAO, is a key feature of a successful DRP. However, following the model of other Bottle Bill states is not necessarily the best way forward for California, given that many other states have lower return rates, unnecessarily increase brand owners' administrative and operational responsibilities and, as they are decentralized, are less efficient than centralized systems in Europe.

A.2.4 Proposed Legislative Amendments

A.2.4.1 The California Beverage Container and Litter Reduction Act: State Property (SB 102)⁹²

The Committee on Budget and Fiscal Review introduced SB 102 in January 2017.⁹³ The Bill proposes relatively minor changes to address the program's immediate challenges. If passed, it would:

⁹¹ Legislative Analyst's Office (2015) *An Analysis of the Beverage Container Recycling Program. An LAO Report*. April 2015.

⁹² https://leginfo.legislature.ca.gov/faces/billStatusClient.xhtml?bill_id=201720180SB102

⁹³ The Bill passed the Senate but has not progressed since it was passed to the Assembly Committee on Budget in June 2017.

- Require Option A retailers in unserved convenience zones to redeem up to 24 beverage containers per consumer per day;
- Set Processing Payments from July 2017 to January 2020 using the recycling costs in effect in December 2015;
- Expand convenience zones to a 1-mile radius (rather than 0.5 miles) of supermarkets.

A.2.4.2 Recycling: Beverage Containers Bill (SB 168)

Originally introduced by Senator Wieckowski in January 2017, this was at one stage an ambitious Bill that would, amongst other measures, have required distributors to establish a beverage container stewardship organization (without transferring powers to design the system). However, the Bill lacked political support and Senator Wieckowski subsequently re-introduced a simplified version with two objectives:

- Introduce minimum recycled content standards for glass, plastic and metal beverage containers;
- Requiring CalRecycle to report to the legislature on alternative designs for the Beverage Container program, looking at EPR-based systems, other Bottle Bill states and the systems in Canada.

While the first measure will strengthen the market for recycled material, it will not address the program's inherent weaknesses and further legislation would be needed following CalRecycle's report.⁹⁴

A.2.4.3 The California Beverage Container and Litter Reduction Act (SB 452)

Having been passed by the Senate and Assembly, Senator Glazer's SB 452 was presented to the Governor, but vetoed on September 30th 2018 because it did not support fiscal sustainability, improved collection or innovative recycling⁹⁵. It did not propose comprehensive reforms, but was intended to address the immediate problems and attract a broad range of stakeholder support. The Bill proposed:

- Restoring Processing Payments to 2015 levels;
- Allocating \$3 million to support redemption opportunities in rural and underserved areas;
- Extending Market Development Payments; and

⁹⁴ In its revised form, the Bill passed the Senate and its First and Second Readings in the Assembly. At the time of writing, it is awaiting a hearing by the Assembly Committee on Appropriations.

⁹⁵ <https://www.gov.ca.gov/wp-content/uploads/2018/09/SB-452-veto.pdf>

- Suspending retailers' responsibility to take back used containers in unserved convenience zones.⁹⁶

While increasing Processing Payments would help recycling centers, it is arguable that suspending retailers' responsibilities – even if they are not currently enforced – would undermine the intent of the original Bill and potentially reduce consumers' options still further, so would not necessarily increase recycling rates.

A.2.5 Governor's Proposals

The Governor's annual budget has, on a number of occasions, proposed reforms to address the structural deficit. Reforms that are simply intended to address the structural deficit will not necessarily support all the objectives of the program, and not all of the recommendations have attracted sufficient support in the Senate and Assembly. These include:

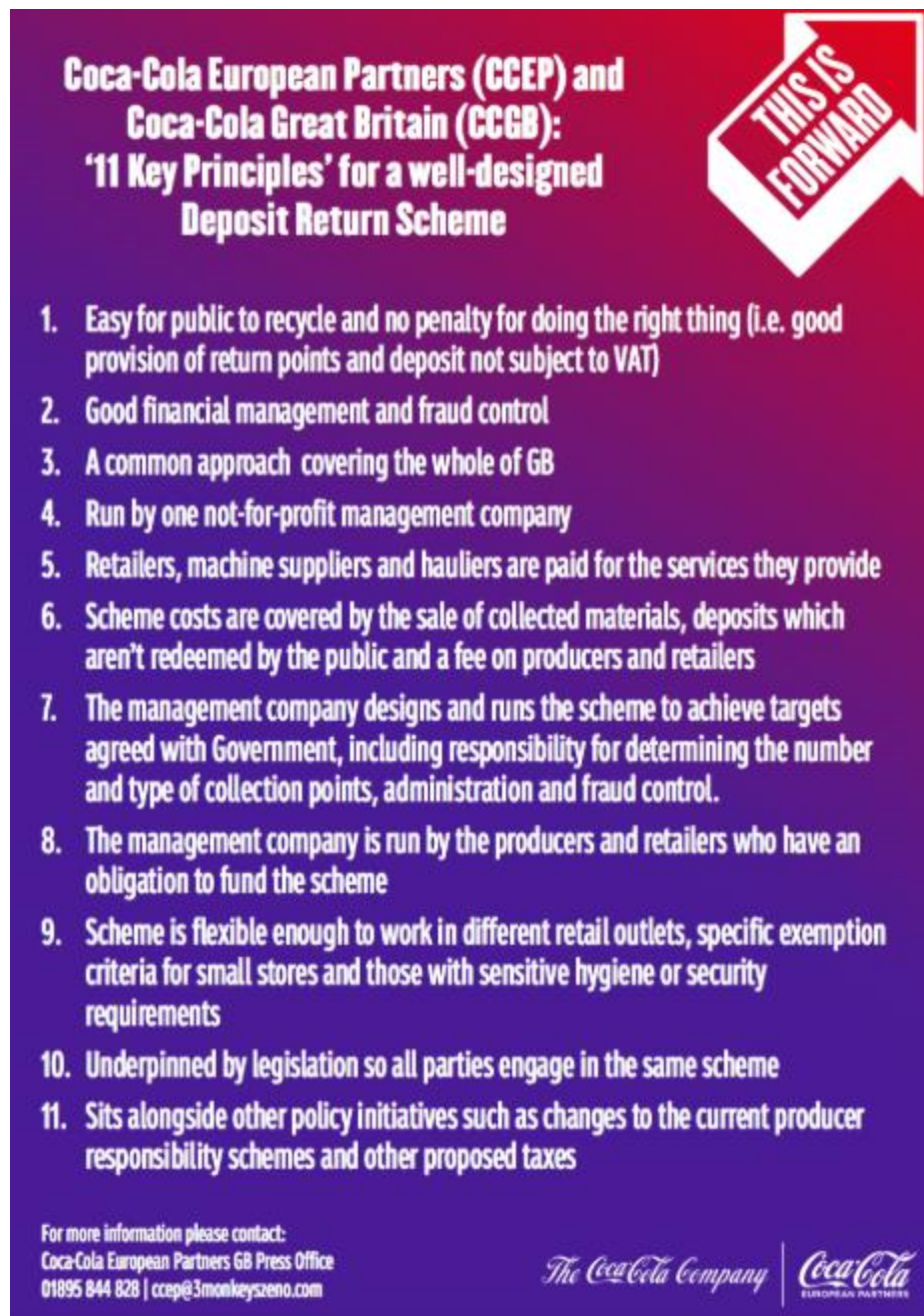
- Eliminating processing fee offsets;
- Eliminating curbside supplemental programs;
- Restructuring administrative fees;
- Eliminating local government payments;
- Restructuring Handling Fees; and
- Expanding the program scope to include more container types.⁹⁷

⁹⁶ The Bill was passed by the Senate in May 2017; it has passed its First and Second Readings in the Assembly and has been re-referred to the Committee on Appropriations.

⁹⁷ <http://www.lao.ca.gov/reports/2014/budget/resources/resources-environmental-protection-022114.pdf>

⁹⁷ http://www.bottlebill.org/assets/pdfs/campaigns/california/Gov's20Proposal%20AB2020%20Changes%20FY1718_ORG3970_BCP1268.pdf

A.3.0 Coca-Cola European Partners - 11 Key Principals for a Well-Designed Deposit Return Scheme



**Coca-Cola European Partners (CCEP) and Coca-Cola Great Britain (CCGB):
'11 Key Principles' for a well-designed
Deposit Return Scheme**

THIS IS FORWARD

1. Easy for public to recycle and no penalty for doing the right thing (i.e. good provision of return points and deposit not subject to VAT)
2. Good financial management and fraud control
3. A common approach covering the whole of GB
4. Run by one not-for-profit management company
5. Retailers, machine suppliers and hauliers are paid for the services they provide
6. Scheme costs are covered by the sale of collected materials, deposits which aren't redeemed by the public and a fee on producers and retailers
7. The management company designs and runs the scheme to achieve targets agreed with Government, including responsibility for determining the number and type of collection points, administration and fraud control.
8. The management company is run by the producers and retailers who have an obligation to fund the scheme
9. Scheme is flexible enough to work in different retail outlets, specific exemption criteria for small stores and those with sensitive hygiene or security requirements
10. Underpinned by legislation so all parties engage in the same scheme
11. Sits alongside other policy initiatives such as changes to the current producer responsibility schemes and other proposed taxes

For more information please contact:
Coca-Cola European Partners GB Press Office
01895 844 828 | ccep@3monkeyzeno.com

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