



Ontario Wine Bottle Reuse Opportunity Report

Modelling and analysis on
the economic, social, and
environmental impacts of
wine bottle reuse



environmental
defence



Ciculr

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Executive Summary

The flourishing Ontario wine sector is a shining example of the fruits of a long-term industrial strategy. The industry supports local jobs, generates hundreds of millions in tax revenues for provincial and federal governments, advocates for sustainable land use and has steadily increased its popularity among the province's wine drinkers. However, single-use packaging remains an economic and environmental vulnerability that this report aims to help resolve.

Based on modelling commissioned by Environmental Defence and Circulr on replacing single-use wine bottles with refillables, the report lays out a golden opportunity for Ontario winemakers to reduce costs and greenhouse gas emissions related to their products while helping the sector on-shore jobs and further boost its cultural, environmental and economic value.

Right now in Ontario there is no practice of refilling wine bottles on a commercial scale. The vast majority of the 40 million litres of Ontario wine sold through provincially-owned liquor stores, the LCBO, in 2025 was in glass bottles that were used a single time and the remainder in other types of single-use packaging, including pouches and multi-layer cartons.

Ontario is well-positioned to support a shift to refill with existing infrastructure that collects used wine bottles back from consumers through the Ontario Deposit-Return Program (ODRP). Modelling by Eunomia Consulting finds that by switching even 10 per cent, or 6 million, of the 750-millilitre wine bottles filled and sold in Ontario to refillables, wineries would:

Reduce bottle costs by

20%

or \$0.13 per refilled bottle

Reduce GHG emissions by

2000 tonnes
per year

69% less than single use

Create the equivalent of

12 new full time
jobs in reuse

and support hundreds in
production and collection

The modelling shows that some industry co-ordination and a small upfront investment in local infrastructure needed to enable wine bottle refill will create financial and environmental returns. We therefore recommend the following next steps:

Ontario Wineries:

- Commit to participating in wine bottle refill
- Urge industry organizations to take a pro-refill stance
- Support the creation of an industry working group to co-ordinate common responsibilities (including establishing bottle standards and overseeing communications to the public and industry partners)

Ontario Government:

- Require a deposit-return program that achieves return rates of at least 80 per cent for beverage containers
- Provide incentives to wineries that implement wine bottle refill, through tax incentives or other measures.
- Support the investments needed to establish the reverse-logistics and wash infrastructure for reuse
- Mandate retail licensees who sell wine, including the LCBO, to provide in-store consumer information about the refill of wine bottles sold on their shelves.

Introduction

Ontario's cooler weather and unique microclimates make it a one-of-a-kind wine market. Wine is grown across Ontario with large clusters of wineries gathered in three key regions: Prince Edward County, Lake Erie North Shore, and the Niagara Peninsula. The Niagara Peninsula is the largest of these three regions, with an estimated 90 per cent of Ontario's wine grape production.¹ The Ontario Wine Appellation Authority, the leading regulatory agency for Ontario wines, listed 194 registered wineries as of the 2025 annual report, with 6 classed as large wineries (over 750,000L sold), 20 being medium class (100,000-750,000L sold), and 168 being small (less than 100,000L sold).² These wineries represent a significant economic engine for the province, with an estimated 22,300 jobs and \$5.49 billion in economic impact generated by the Ontario Wine and Grape industry.³

Circulr and Environmental Defence have come together over a shared interest in spurring the refill of bottles in Ontario's wine sector. Environmental Defence has a long history of supporting more sustainable packaging systems to avoid waste and greenhouse gas emissions, having published a 2011 report, *Refillable Wine Bottles in Ontario: Cases for Reuse*.⁴ Circulr is a reuse service provider that has enabled various packaging reuse projects, including wine bottle reuse pilots in the Niagara region.⁵ The two organizations engaged Eunomia Consulting in 2026 to deploy its reuse modelling tool to assess the cost, social, and greenhouse gas emission impacts of switching from single-use to refillable bottles for wine bottled and sold within Ontario.

The results are striking, and the benefits are clear: **refilling wine bottles is 20 per cent cheaper, produces 69 per cent fewer greenhouse gas emissions, and creates more local jobs than single-use glass bottles** – which continues to be by far the most popular way to produce and consume wine in Ontario.

Ontario is well-positioned for wine refill:

1. Consumers are accustomed to returning alcohol containers for deposit
2. An existing reverse-logistics system operated by The Beer Store already supports refill
3. The industry seeks solutions to address its packaging vulnerabilities

Cascading risks to global supply chains have made sourcing single-use packaging inconsistent, challenging, and expensive for local producers. Now is an opportune time for the wine industry and the government to take steps to implement wine bottle refill in Ontario.

¹ Wines of Niagara: [https://winesinniagara.com/2023/08/unified-front-takes-wine-mission-to-ontario-government-and-lcbo/#:~:text=The%20Ontario%20wine%20industry%20plays,\\$1%20billion%20to%20Canada%27s%20GDP.](https://winesinniagara.com/2023/08/unified-front-takes-wine-mission-to-ontario-government-and-lcbo/#:~:text=The%20Ontario%20wine%20industry%20plays,$1%20billion%20to%20Canada%27s%20GDP.)

² <https://vqaontario.ca/wp-content/uploads/2025/07/OWAA-ANNUAL-REPORT-STATISTICS-2025.pdf>

³ <https://www.winegrowersontario.ca/industry-facts/>

⁴ Available at <https://environmentaldefence.ca/report/report-refillable-wine-bottles-in-ontario-cases-for-reuse/>

⁵ <https://www.theglobeandmail.com/life/food-and-wine/article-plans-to-sell-niagara-wine-in-refillable-bottles-continue-to-ferment/>

The Economic Benefits of Wine Bottle Refill: Securing Made-in-Ontario Supply

Global supply chains for packaging and products have experienced a series of shocks in recent years, starting with the 2020 global COVID pandemic. In that time, millions of litres of Ontario wine have been bottled in single-use glass bottles sourced from overseas at high cost and with inconsistent availability. After a single use, nearly 80 per cent of those bottles were smashed for recycling after being returned through the ODRP.⁶ The rest were either littered, landfilled, incinerated or placed in the curbside recycling system—which does not have a strong record for recycling glass.⁷

The existing supply chain for bottles results in costs and missed opportunities for Ontario's wine sector and the broader economy. Wine bottle refill would not only address supply chain vulnerabilities, it would also respond to the increasing priorities of securing local supply chains and driving local job growth and economic activity.

Insulation against supply volatility in raw materials: Glass bottles require vast quantities of raw materials that are subject to price fluctuations and shortages, both of which can directly affect the price and availability of downstream products such as bottles. The United Nations currently deems silica sand, the main ingredient in virgin glass bottles, to be the second most exploited resource in the world, only behind water, another key input for virgin bottles. Reusing glass bottles even once before they are recycled significantly reduces raw material use and cost.

Supply shock absorption: Since the 2020 COVID shutdowns, global supply chain disruption has been the norm rather than the exception. The Suez Canal blockage, tariffs, and wars have created continuous and overlapping supply chain disruptions, creating uncertainty in the cost, availability, and consistency of globally sourced materials. Many wineries around the world, nearly 40 per cent by some surveys, have switched to sourcing their packaging domestically since COVID to avoid these risks.¹⁰ However, sourcing single-use bottles, even domestically, still relies on global supply chains for inputs and materials, shifting the problem down the chain. In contrast, bottle reuse shrinks the supply chain for bottles to a much more manageable geography, leaving fewer opportunities for disruption and accessible alternative paths when disruptions do occur.

Ontario wineries primarily source their glass packaging from distant markets, including China and Europe, making them vulnerable to unforeseen events halfway across the world. Keeping an accessible float of bottles within Ontario would help producers plan more accurately, receive product more consistently, and maintain a stable price for producers and consumers.

⁶ TBS reported a return rate of 79 per cent for large glass alcohol containers in 2022: <https://rprra.ca/wp-content/uploads/D-Beer-S-RPRA-AR2022-EN-Singles-Link-Final.pdf>

⁷ Continuous Improvement Fund, "Glass End Markets," 2019: <https://thecif.ca/wp-content/uploads/2020/02/495-Glass-End-Markets-Final-Report.pdf>

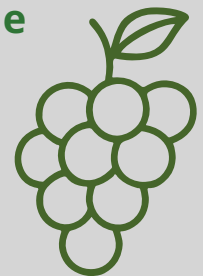
⁸ <https://www.globalinsightservices.com/reports/silica-sand-for-glass-making-market>

⁹ <https://www.unep.org/news-and-stories/story/problem-our-dwindling-sand-reserves>

¹⁰ <https://www.winebusiness.com/wbm/article/305549>

Jobs and economic development for Ontario: Reuse systems and infrastructure replace packaging imports and waste with local services, which create jobs and economic activity. According to the European Environmental Bureau, one job in the throwaway sector replaces nine jobs in the reuse sector.¹¹ Another study estimated that refillable bottles create five times more jobs than non-refillables.¹² In Germany, 73 per cent of the jobs in the beverage sector involved reusable containers, and it is estimated that if one-way containers were to take the place of all those refillables, 53,000 jobs would be lost. In contrast, if refillables captured the entire market, some 27,000 new jobs would be created.¹³

"Reusing wine bottles is a win, win, win for the industry, the province, and the environment. For an industry where agriculture is so important, it seems to me that this is an essential stewardship initiative well worth pursuing."



- Andrew Howard, President, Diamond Estates Wines & Spirits



"Consumer buy-in is key to the success of reuse programs. By helping Ontarians become more familiar and comfortable with reuse, a wine bottle reuse system could support the development of similar programs for other high-waste products, such as takeaway cups and containers. Ontario's wine industry has an opportunity to help lead that shift."

- Dr. Laurel Besco, Associate Professor, University of Toronto

¹¹ Institute for Local Self Reliance. The Economics of Refillable Beverage Containers. Available at <http://www.grrn.org/beverage/refillables/economic.html>

¹² R3 Consulting Group, Inc and Clarissa Morawski. Evaluating End-of-Life Beverage Container Management Systems for California: Final Report. May 2009. Available at <http://www.container-recycling.org/assets/pdfs/reports/2009-BeverageSystemsCalifornia.pdf>

¹³ Institute for Local Self Reliance. The Economics of Refillable Beverage Containers. Available at <http://www.grrn.org/beverage/refillables/economic.html>

Impacts of Reuse

How Reuse Works

Reuse models can take many shapes and forms; however, for the purposes of this report, we analyzed a specific type of reuse based around three key characteristics.

Pre-fill: To match the business process used today, refillable bottles are delivered to wineries, filled on automated filling lines, then shipped to retail.

Return to depot: Relying on existing consumer behaviour and infrastructure of the ODRP, consumers continue to return empty bottles to The Beer Store.

Standardized and shared bottle: Wineries adopt a standard bottle, or set of bottles, that can be easily identified, sorted, and shipped together, allowing for efficient washing and quality control. Standard bottles shared by multiple wineries lower the cost for all participants.

Core Model Assumptions

Eunomia's modelling is based on replacing six million single-use 750ml glass wine bottles filled, sold and consumed across Ontario with a pool of standard refillable bottles. This represents 10 per cent of Ontario wine sold for consumption in Ontario. Bottle filling and sales distribution were assumed to be in line with current geographic distribution. It was assumed that current single-use bottles have an average weight of 400g, while the thicker reusable bottle would weigh 450g to withstand repeated reuse. The model assumes a 75 percent return rate, based on data provided by The Beer Store. This return rate allows for refillable bottles to be used, on average, four times.

A full list of model assumptions can be found in the Appendix.

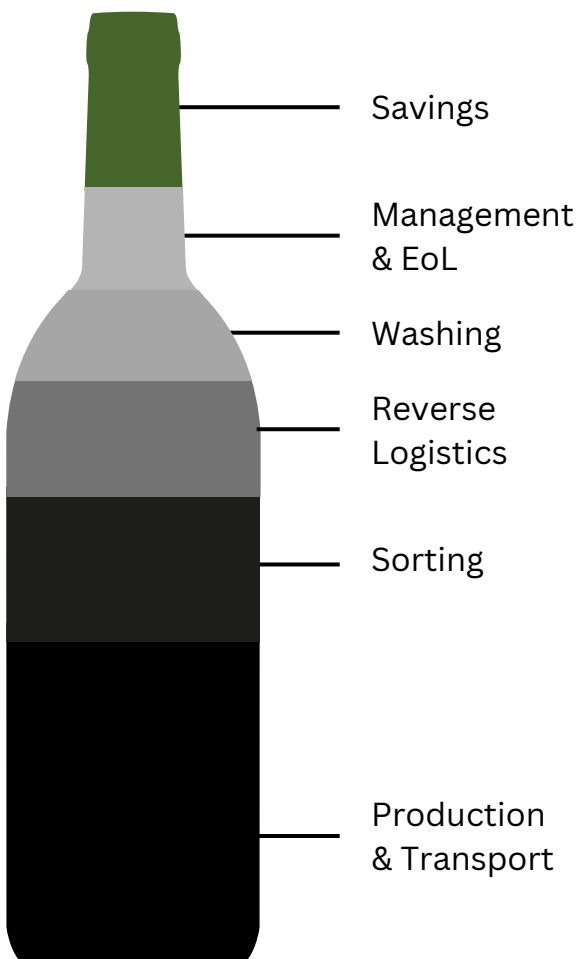
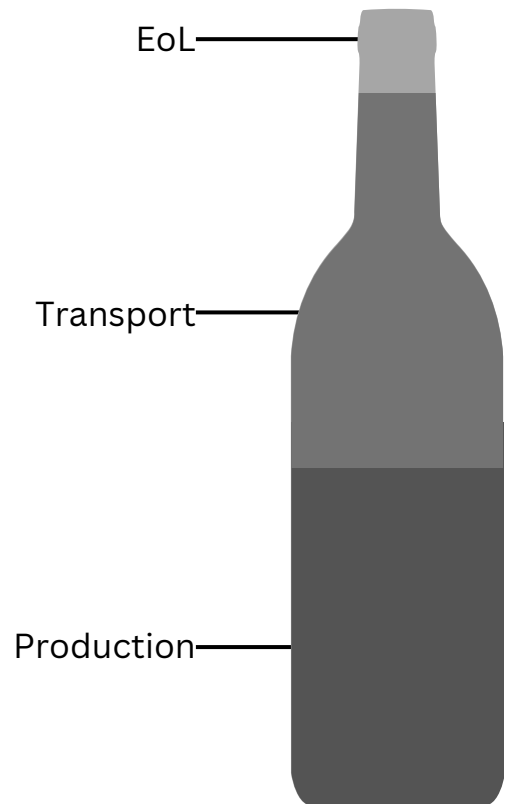


Findings: Cost Savings

A key finding of the modelling is that a bottle refilled an average of four times is significantly cheaper than a single-use bottle. The cost of a single-use bottle was broken into three categories:

- raw materials and manufacturing, meaning the sourcing and conversion of raw inputs into a glass bottle;
- converter to filling, covering the transport of bottles from the original manufacturing to a winery; and finally,
- End of life (EoL), which covers the cost to recover and recycle an empty bottle.

The estimated lifecycle cost of a single-use bottle is \$0.65, with the majority of the cost coming from transport to filler (\$0.29) and raw material production (\$0.27).



The estimated lifecycle cost, per use, of a refillable bottle is \$0.52 based on the following phases:

- The initial production cost of the bottle (\$0.93) is spread across the expected useful life of the bottle (four uses, based on a return rate of 75 per cent) for a per-use raw material cost of ~\$0.23. Transport from local manufacturer to filler is a fraction of a cent, included here
- The bulk of the remaining cost is spread across the various tasks involved in reuse, including sorting(\$0.10), reverse logistics(\$0.07) and washing(\$0.06), which combine for \$0.23.
- The costs to manage and recycle the reusable bottle at end of life amount to \$0.06 per use.

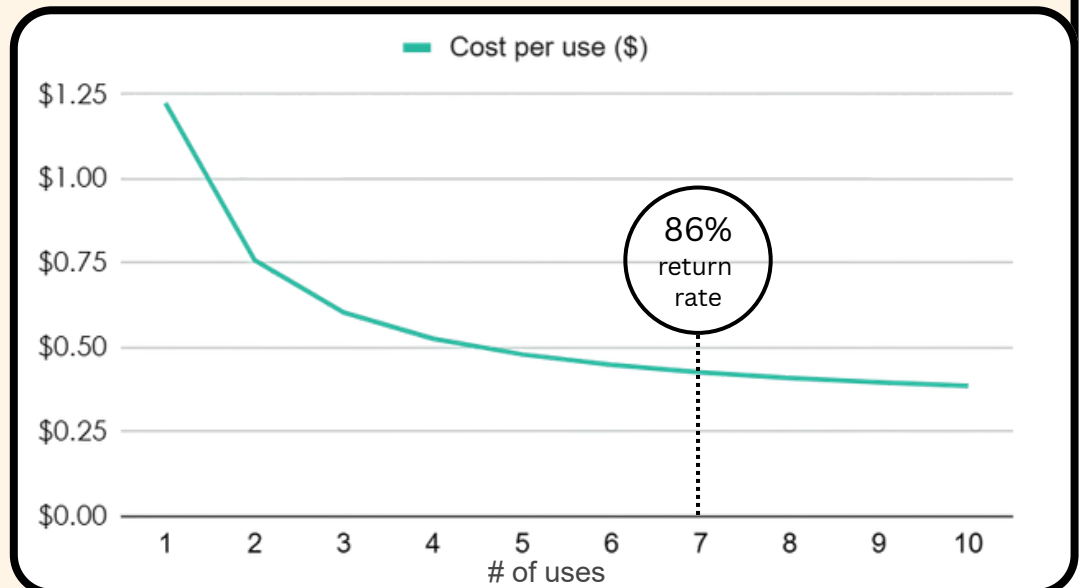
Adopting reuse would therefore save wineries an estimated 13-cents per use as compared to single-use bottles. The total savings of replacing 6 million single-use bottles with refillables amount to \$780,000 per year.

Return Rates Drive Impact

The per-use bottle cost falls with each reuse, which can be increased through higher return rates. An 86 per cent return rate for wine bottles, which matches the current return rate for beer bottles, would result in an average of seven reuses for each bottle, reducing the per-use cost to \$0.40 and providing a \$0.25 savings per use as compared to single use.

Even a lower return rate of 67 per cent would still allow for an average of three reuses, resulting in a cost of \$0.58 per use and a \$0.07 saving over single use.

Graph source:
Eunomia modelling



Findings: Infrastructure Requirements

Relatively modest new infrastructure investments would be needed to transition single-use wine bottles to refill given that systems already exist through the ODRP to get wine bottles back from consumers in Ontario. The modelling estimates that approximately \$1.7 million CAD worth of new infrastructure would be needed:

- Additional materials for sorting refillables returned to the existing collection points: \$34,000
- Cleaning and quality control: \$1,500,000
- Return of refillables from sorting and cleaning centres to wineries: \$140,000

Total Reuse System CapEx: ~**\$1,700,000**

The annualized cost of capital expenses is estimated at \$170,000 per year over 10 years, or less than \$0.03 per use.

Note: the modelling does not take into account the costs that individual wineries might incur to adapt their operations to fill and seal standard bottles and to apply wash-off labels.

Findings: Economic and Social Impacts

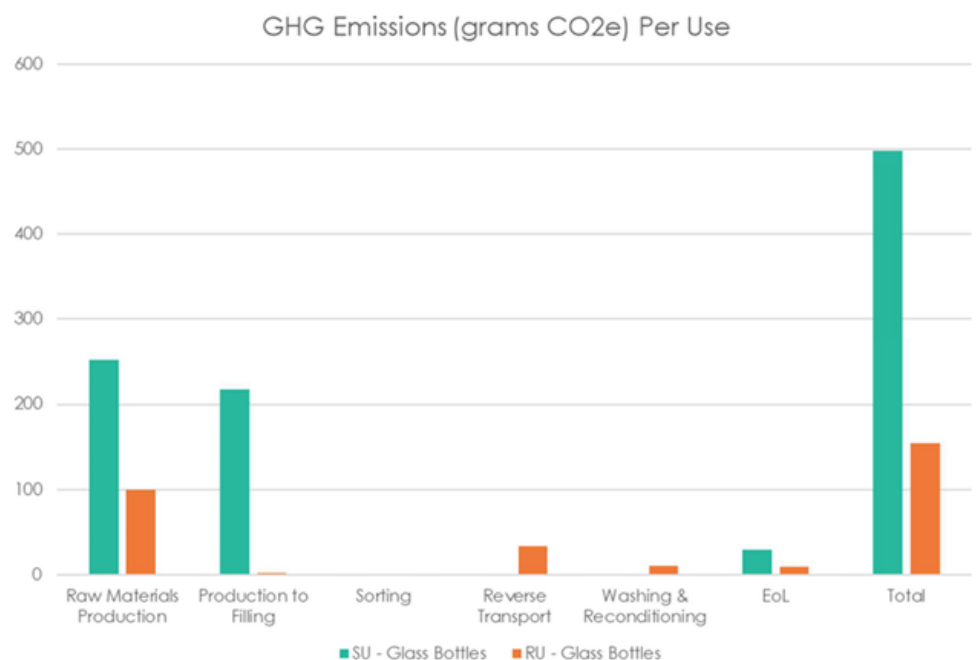
Our modelling suggests that shifting only 10 percent of the Ontario wine sold in the province from single-use to refilled bottles would directly create the equivalent of **12 new full-time Ontario jobs** in logistics and sanitation. This figure does not include the onshoring of reusable-bottle production or of system management and coordination jobs. Indirect jobs would also be created to support these new activities, including accounting, inspection and other support services. Hundreds of existing jobs in ODRP operations, local logistics, and bottle manufacturing would also be supported by the program, resulting in difficult-to-quantify indirect job activity. What's more, the new direct jobs would pay for themselves since the modelling shows that the per-unit cost of the bottle and the activities associated with refilling it would be less than what the wineries currently pay for imported single-use bottles and waste.

Findings: Climate-Changing Emission Reductions

Glass bottle production and transport are widely seen to be the most carbon-intensive steps in the wine-making process. It's estimated that glass bottles represent upwards of 29 per cent of all GHG emissions from the production of a single bottle of wine.¹⁴

The GHG emissions generated through collection, sorting and washing of reusable bottles (RU) are much lower than emissions during the bottle production phase. While a reusable bottle is heavier and requires more glass, production-related emissions are spread across multiple uses, rendering per use emissions much lower than for single-use (SU) bottles.

Our modelling found that switching to reusable bottles would reduce individual, per-use bottle emissions by roughly **69 per cent**. When scaled to the target of six million single-use bottles replaced, this would create a reduction of **2,000 metric tonnes of CO₂e per year**, the equivalent of removing around 435 passenger cars' worth of annual emissions.



Source: Eunomia modelling

¹⁴ <https://www.portprotocol.com/solution/climate-in-a-bottle-jancis-robinson-charles-bieler-laura-varpasuo-and-martin-r-reyes/>

Further Environmental Benefits of Wine Bottle Reuse

The modelling commissioned for this report focused on comparing costs and greenhouse gas emissions for the specific case of bottling Ontario wine for consumption in Ontario. Studies based on cases from other jurisdictions, including Quebec and Europe, suggest additional environmental benefits of adopting wine bottle refill.

Preliminary results of a study by the European Commission comparing single-use glass with refillable glass wine bottles¹⁵ found that the impact of reused bottles was 40 per cent that of single-use bottles when looking at greenhouse gas emissions and water use. This was true even though the reusable bottles in the study were heavier, which can increase transportation-related emissions

A 2015 life cycle assessment of Quebec's beer market found that the existing refillable glass bottles scored better than the single-use glass, aluminium, and plastic on the market for three of the factors it examined: climate change, resource use and human health.¹⁶ That study also



suggested that single-use glass bottles use 3.4 times the amount of raw materials as reusable bottles in a deposit-return system in which 98 per cent of the refillables are returned. Another study similarly found that a reusable glass bottle generates fewer greenhouse gas emissions than a single-use aluminium container after only three uses.¹⁷

The studies all indicate that the key to environmental performance is to ensure multiple uses of the same container, which requires a system like the ODRP to capture the used bottles from consumers for cleaning and refilling. Ontario consumers have proved adept at returning refillable beer bottles to The Beer Store, with a consistent return rate of at least 89 per cent. These bottles are reused an average of 15 times, allowing brewers to avoid some 228 million single-use bottles or cans in Ontario in 2023 alone.¹⁸

¹⁵ Joint Research Centre - European Commission, "Supporting the co-decision process of the PPWR: Environmental analysis of reuse scenarios, 2023: <https://eeb.org/wp-content/uploads/2023/09/Environmental-analysis-of-Reuse-scenarios-15.09.23-JRC-final.pdf>

¹⁶ CIRAIQ, "Rapport final: mise à jour de l'analyse de cycle de vie de contenants de bière au Québec," 2015: <https://www.recyc-quebec.gouv.qc.ca/sites/default/files/documents/acv-contenatthe-nts-biere-rapport-2015.pdf>

¹⁷ Zero Waste Europe, 2020: https://zerowasteurope.eu/wp-content/uploads/2020/12/zwe_reloop_executive-summary_reusable-vs-single-use-packaging_a-review-of-environmental-impact_en.pdf

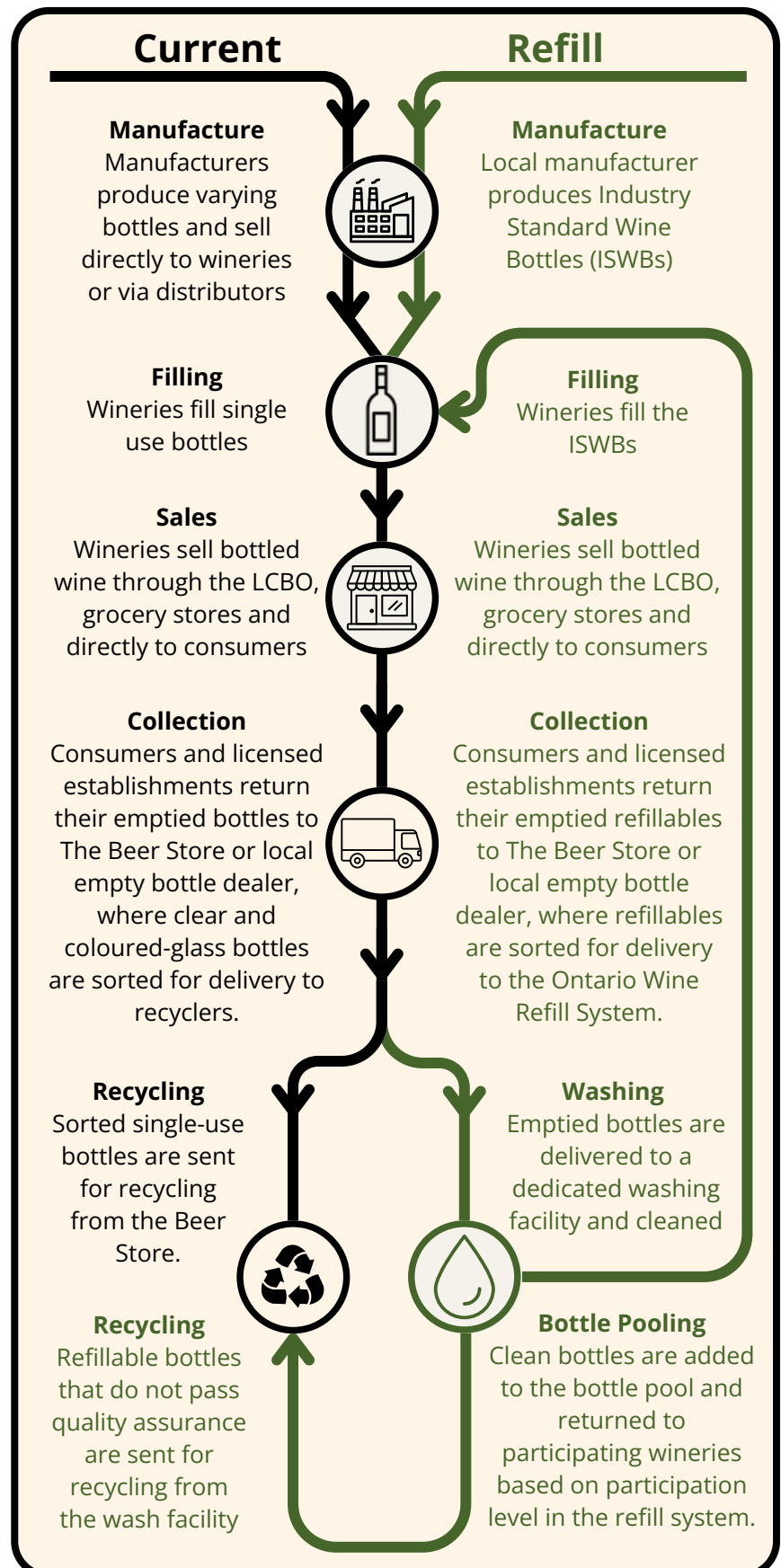
¹⁸ See https://rprra.ca/wp-content/uploads/RPRA_AR_Appendix_D_Brewers_Retail_2023.pdf

Small Changes, Big Benefits: Getting to Wine Refill in Ontario

As the graphic to the right illustrates, minimal changes are needed to the existing packaging material flow to enable reuse. The existing forward supply chain of full bottles would remain the same for reusable bottles, with the slight addition of new communications on the bottle and in stores to educate customers about the new program. Once emptied, bottles are returned through existing infrastructure, leveraging consumers' strong return habits. Once returned, bottles are handled similarly to refillable beer bottles, leveraging the current sorting and logistics infrastructure and processes with minor tweaking.

The modelling assumes a single system shared among participating wineries but does not compare the range of possible governance and ownership options for that system. Participating wineries will need to make decisions about how to operate the system, acquire the necessary float of refillable bottles and finance the modest upfront capital requirements.

The new elements needed to enable reuse are infrastructure to ensure bottles sorted through the existing ODRP are delivered to a wash facility and distributed back to participating wineries. Capital costing in this model assumes the commissioning of a dedicated wash, quality control and distribution site for refillable bottles.



Building on Ontario's Strength

One of the unique elements that makes Ontario a strong candidate for a widespread bottle reuse project is the success of the existing ODRP, which is operated by The Beer Store (TBS) and built on a century of return-for-refill industry-standard beer bottles (ISB).

The ODRP was implemented in 2007 for all alcohol containers sold in the province, including wine, with TBS serving as the return location for all alcohol empties. Winemakers already pay into this system to manage the end-of-life of their bottles and therefore already contribute to a key reverse-logistics system that can serve wine bottle refill.

The ODRP has helped to recover billions of beverage alcohol containers since 2007. In 2025, TBS collected 1.1 billion empties of all material types, or 75 per cent of the containers placed on the market that year. The overall return rate for beer bottles was even higher, at 86 per cent. This consistently high recovery rate leads to the diversion of hundreds of thousands of tonnes of waste, with 161,262 tonnes diverted in 2025 alone.¹⁹

Even with a decline in the beer refill market share in Ontario, 190 million of the containers collected by TBS in 2025 were reusable bottles, representing an 89 per cent return rate for reusable bottles.¹⁹ The continued high return rate for refillables shows that Ontario consumers have not lost the practice of returning glass bottles for refill.

TBS has built a successful reverse-logistics system throughout Ontario to deliver beer and pick up alcoholic beverage empties at retail outlets, bars and restaurants. This system ensures that empty container material is sorted where it is collected from consumers and delivered for effective recycling or refill. This makes the ODRP an excellent platform on which to launch further refill programs and to expand the deposit-return system in Ontario to include non-alcoholic beverage containers.

However, recent changes to the beer retail market in Ontario have undermined the return infrastructure for alcohol empties. In 2024, the Ontario government liberalized the sale of ready-to-drink alcoholic beverages, making beer now widely available in grocery, convenience and corner stores across the province. This led to a decline in sales at TBS outlets, and more than 100 TBS locations closed between 2024-2026. These closures have left many Ontarians without access to return locations for their empties and put the effectiveness of the ODRP at risk.

It is crucial that the Ontario government step in to ensure the future health and viability of the ODRP and the essential environmental and economic benefits it provides. Expanding the program to include non-alcoholic beverage containers, which are currently not covered by a deposit-return program, should be a priority. Increased container volumes will support the buildout of additional return locations, making the program more accessible, and will reduce per-unit costs of collection and processing by increasing overall handling volume.

¹⁹ See TBS Stewardship Report, 2025, available at https://www.thebeerstore.ca/api/images/wyfly6ekgxs8/4rVbR8GpWDD0GBw6X8USVQ/12ab34fdcb30ba1e06c2647469b69dea/StewardshipReport2025_Digital.pdf

Wine Regions Explore Refill

Governments around the world are implementing measures to not only ensure recycling of packaging material, but to reduce the amount of packaging waste generated in the first place. Reuse and refill programs for packaging are seen as the gold standard to drive waste reduction for goods that require packaging, such as beverages. The European Union²⁰ has set targets for the refill of beverage containers under recent packaging regulations, and California's latest packaging law provides funding for producer refill programs.²¹ These rules are likely to drive change in markets beyond their borders. With the ODRP and the beer industry's long-standing beer bottle refill program, Ontario is well-positioned to play an important role in the shift away from single-use packaging, and local wines are a logical place to start.

Success Stories of Reuse: Revino

Wine bottle reuse is not a new idea, but a proven success over centuries in many wine regions around the world. Historically, in regions like France, wine was initially distributed in a bring-your-own-container model before the wide adoption of industrial glass.²² Even early in the adoption of industrial glass, refund and refill models were prominent, with many only being abandoned in the mid 20th century during the expansion of single-use. However, with the negative effects of single-use and the benefits of reuse being rediscovered in modern times, many resurgences of wine bottle reuse have popped up around the world.

One new example of recent successful wine bottle reuse comes from Revino, an Oregon-based reuse service provider that has been spreading wine bottle reuse throughout the state. The company launched in 2023 and operates on a standardized shared bottle mould model, similar to the one described in this report. A key difference is that their collection operates separately from a government-mandated DRS and instead relies on consumers returning bottles directly to wineries.

Revino has already partnered with over 100 wineries and distributed over 1 million reusable bottles. Their success has been recognized not only within the industry and the media, but also by the government, having recently received a \$4.8 million USD grant from the state of California to expand operations into the state.²³



²⁰ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3A4806724>

²¹ https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB54

²² <https://winehistoryproject.org/wine-bottles>

²³ <https://www.revinobottles.com/revino-receives-4-8m-grant-to-build-first-california-bottle-reuse-facility-begins-deploying-washed-bottles-for-reuse/>

Ontario Pilot Progress

Wine bottle reuse has gained steam in Ontario in recent years following a string of successful reuse pilot projects. Starting in 2024, Circulr partnered with wineries to collect bottles poured in their tasting rooms, which were then manually delabelled, washed, sanitized, and refilled. Starting with Stratus Vineyards and quickly adding Kings Court Estate, Leaning Post, Malivoire, and Two Sisters, the partnership saw the reuse of over 6000 bottles in the Niagara region. These proof-of-concept pilots demonstrated the operational viability of wine bottle reuse while also building interest among both wineries and the wider public, with the pilots gaining national media coverage.²⁴



“Sustaining Ontario’s wine industry means thinking beyond the vine. What started as a pilot with Circulr proves that bottle reuse works—now it’s time for full industry adoption. By closing the loop on glass packaging together, we can build a resilient local supply chain and safeguard Niagara’s future, one reused bottle at a time.”

- Dean Stoyka, Winemaker, Stratus Vineyards

Bottle Standards Within Reach

Wine bottles around the globe are standardized to a handful of basic shapes. The Porto Protocol estimates that 70 per cent of wine globally is sold in one of two bottle shapes: Bordeaux and Burgundy, with minor variations in height, thickness, and style. This finding was supported by our own research, which showed that 95% of all 750ml bottles of still wine sold in Ontario were bottled in one of these two bottle shapes

Burgundy:

- Wider bottle with lower, less pronounced shoulders
- Typically for rosés and whites, particularly Chardonnay

Bordeaux:

- Pronounced high shoulders and a shorter neck
- Used for red wines and some white wines, such as Pinot Grigio

Standardization is a crucial part of reuse as it allows for different participants to use the same bottle, increasing the economies of scale faster than if each player required a unique bottle and thus a different sorting and handling protocol. It also allows for simplified sorting at collection points and easier identification for consumers. In our modelling and our recommendations, we assume that a reusable bottle system in Ontario would launch with four bottle types: a clear Bordeaux, a green-tinted Bordeaux, a clear Burgundy, and a green-tinted Burgundy.

²⁴ Christopher Waters, The Globe and Mail: “Plans to sell Niagara wine in refillable bottles continue to ferment” April 2025 <https://www.theglobeandmail.com/life/food-and-wine/article-plans-to-sell-niagara-wine-in-refillable-bottles-continue-to-ferment/>

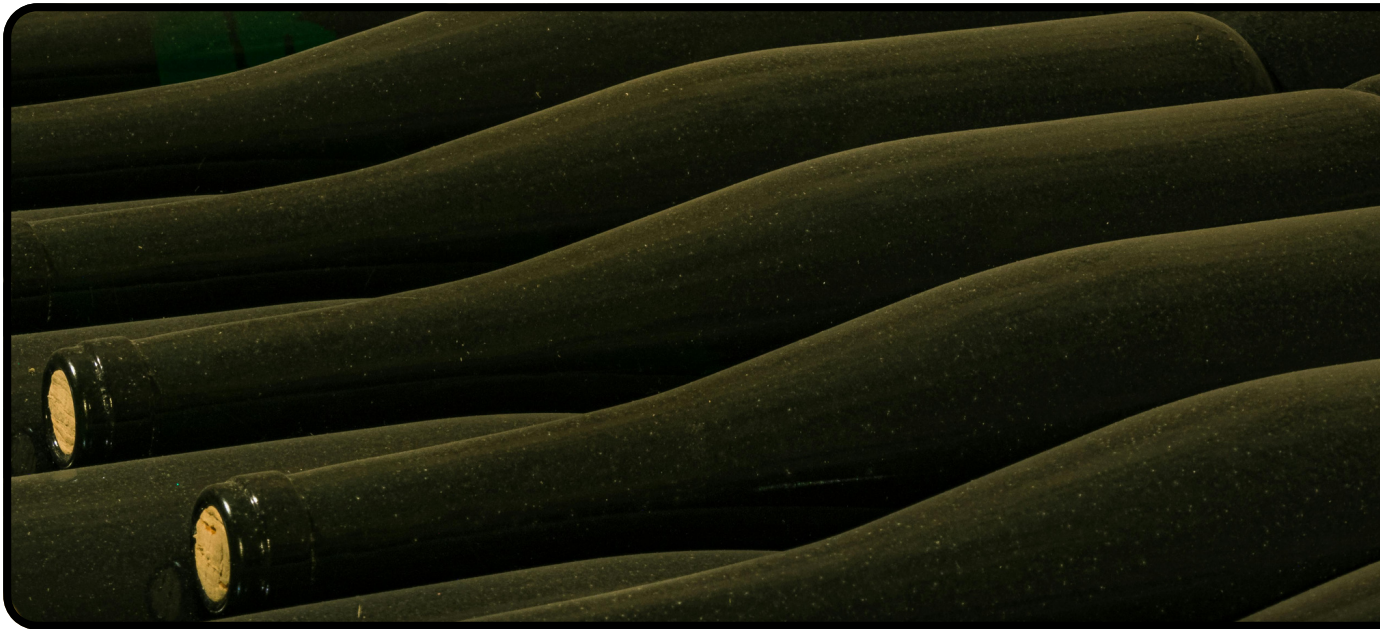
Next Steps: From Theory to Practice

Shifting Ontario wine bottles sold in Ontario to refill makes both economic and environmental sense for the industry and the provincial government. We recommend the following actions to make wine bottle refill a reality:

Recommendations for Ontario winemakers

Given the strong case for bottle reuse from a job creation, cost saving, and supply chain insulation perspective, the wine industry should move to support the design and development of a wine bottle reuse system.

- **Industry Associations Adopt Pro-Refill Position:** The existing ecosystem of organizations that exist to support and grow the Ontario wine industry should publicly support reuse to improve the chances of adoption and government support. It would also ensure a province-wide, holistic approach.
- **Establish Industry Working Group:** Designing the reuse system to benefit the various types of wineries that exist in Ontario, as well as the broader wine eco-system, will require a collaborative approach that unites wineries, suppliers, stakeholders, and system enablers. Convening this group will be crucial for building consensus and creating a strong program. We recommend the industry come together to create a new, reuse-specific working group responsible for identifying standard label materials, bottle specs, and agreement structure.
- **Industry Institutions Lead the Charge:** Given the centralization of alcohol sales in Ontario and the major roles they play, the LCBO and TBS will be crucial in making the system come to life. We urge both organizations to coordinate customer-facing awareness campaigns to explain the benefits of reuse and how customers can participate.



Recommendations for the Ontario Government

The wine industry is an important sector in the Ontario economy, and it could improve financial performance while creating less waste. The Ontario government can play a role in supporting the adoption of wine bottle refill:

- Support the upfront capital investment needed to establish the reverse-logistics and wash infrastructure in Ontario, for example, grants or interest-free loans for washing facilities and a low-emissions fleet to drive further GHG reductions.
- Expand the deposit-return system to include non-alcoholic beverages to leverage economies of scale, improve return accessibility, and drive increased return rates.
- Ensure the ODRP retains its record of strong return rates for alcohol empties, including by requiring unredeemed deposits to be used to increase access to return locations across Ontario.
- Mandate the LCBO, retail licensees and the Beer Store to support consumer education about the wine bottle refill.

Incentivizing reuse: Until recently, the LCBO charged an 8.9-cent non-refillable levy on every single-use glass bottle sold through the LCBO, meant to promote the refillable beer bottle program. In a recent pricing modernization update, the fee was quietly removed from the LCBO's costing structure. Though streamlining pricing does help to simplify operations for Ontario wineries, removing such a vital lever for change could stifle the creation of new reuse programs and even threaten the existing beer bottle reuse program.

- Reinstate a financial incentive for the adoption of reuse to replace the 8.9-cent levy that was previously imposed on single-use containers sold through the LCBO. This could include a tax credit applied to refilled bottles, disposal fees on single-use bottles, or an industry-wide reuse target regulated under the Extended Producer Responsibility program.²⁵



²⁵ Svatikova, K., A. Brown and P. Börkey (2025), "Economic instruments for a resource-efficient circular economy", *OECD Environment Working Papers*, No. 257, OECD Publishing, Paris, <https://doi.org/10.1787/35a7051a-en>.

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A Report by:



environmental
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Ciculr

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Appendix

A.1.0 Assumptions List

This section summarizes the key assumptions and data sources underpinning the modelling completed by Eunomia, which this report pulls heavily from. Key system-specific drivers were identified for the Ontario reuse system (such as regional transport distances), and those drivers were targeted for detailed research to develop relevant assumptions. For other areas, generic assumptions were used (such as wash machinery energy consumption) based on previous research, as they were not relevant to Ontario specifically. In several cases, reuse modelling work from other jurisdictions (most notably California) has been used as a proxy, reflecting similarities in equipment, operational processes, and labour roles. Ontario-specific data were applied wherever they were expected to materially influence outcomes, particularly with respect to energy inputs, geographic distribution, market composition, and existing return infrastructure.

Area	Assumption	Rationale	Source / Basis
Package scope	Analysis limited to 750 ml wine bottles	Represents the dominant format in the Ontario wine market	Circular project scope
Bottle weights	Single-use bottle: 400 g; reusable bottle: 450 g	Reflects durability requirements for reuse	Circular specification and winery-provided specifications
Bottle manufacturing (SU)	Single-use bottles manufactured in China and France in equal proportions, then shipped to Ontario via sea, rail, and truck	Represents current global glass supply chains	Circular inputs; industry practice
Bottle manufacturing (RU)	Reusable bottles manufactured locally in Brampton	Plausible domestic supply-chain configuration for reuse	Circular specification
Market size	~61 million bottles of wine bottled in Ontario annually (2025), stable relative to 2024	Recent reported volumes	VQA annual report; LCBO annual report

Area	Assumption	Rationale	Source / Basis
Channel split	~92% off-trade and ~8% on-trade	Reflects current Ontario sales patterns	VQA annual report; LCBO annual report
Reuse scale	6 million bottles per year modelled (~10% of market)	Represents a realistic at-scale system	Project definition
Bottle pool sizing	Additional 30% bottle pool above annual reuse volume	Accounts for circulation delays, losses, and peak demand	California reuse modelling
Return rate	75% bottle return rate	Consistent with observed large-format glass return rates	The Beer Store
Standardization	High degree of bottle standardization assumed	Required for operational viability of reuse	Circular system design
Wine regions	Three regions modelled: Niagara Peninsula, Prince Edward County, Lake Erie North Shore	Captures geography without winery-specific modelling	VQA
Winery location	Each wine region represented by a single centroid	Appropriate for high-level distance modelling	Modelling simplification
Regional weighting	Production weighted by number of wineries per region	Proxy where shipment data unavailable	VQA annual report
Return infrastructure	Returns aligned with The Beer Store's take-back and DC network, dominated by manual systems	Leverages existing reverse-logistics infrastructure	System assumption

Area	Assumption	Rationale	Source / Basis
Retail returns	Off-trade bottles returned via Beer Store ~1,300 redemption sites	Matches current consumer behavior	The Beer Store
On-trade returns	On-trade bottles returned via DC network	Reflects commercial collection practices	Modelling assumption
Distribution centers	26 DC locations assumed, approximated using population density	Avoids reliance on confidential infrastructure data	The Beer Store
Washing location	Centralized bottle washing assumed in Brampton	Minimizes average transport distance at scale	Circulr system design
Washing line	Washing machine operating 2,500 bottles per hour, 2,000 hours per year, 4 staff per line	Reflects actual washing line data	Circulr engagement with suppliers
Electricity	Ontario grid emission factors and prices applied	Reflects local energy context	Ontario Energy Board
Fuels	Canadian natural gas and LPG prices applied	Relevant to washing and logistics	NRCan; GlobalPetrolPrices
Labor costs	California labor costs used as a proxy for Ontario	Comparable processes and roles	California reuse study