PATENTED SYSTEM

The Patented Eco-Z Recharge Cleaning System

A scalable packaging system designed to help U.S. brands, retailers, distributors, and manufacturers reduce plastic use and packaging-related supply chain impacts.

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Commercial and Environmental Impact of the Eco-Z System

98.0%
Reduction in plastic materials

164
metric tons CO_2e Avoided

802
Pallets avoided

Modeled at 1 million recharge cycles and 25 uses per reusable Bottle. See methodology for packaging weights, emission factors, pallet capacities, system boundaries, and rounding.



The problem isn’t just plastic. It’s packaging physics.



Conventional model

3.53 oz of packaging discarded per cycle

A rigid single-use package is manufactured, transported, and discarded during every cycle.

0.071 oz Eco-Z Recharge Bag



The reusable Eco-Z Bottle is retained. Only the sealed Eco-Z Recharge Bag is replaced.

Eco-Z’s packaging advantage is driven by three measurable mechanisms: avoiding repeated rigid packages, reducing packaging material per recharge, and reducing the space required for unfilled packaging.

Packaging weight: 98% less plastic per recharge.



In this comparison, a conventional single-use package uses 3.53 oz of plastic for 33.8 fl oz of product.

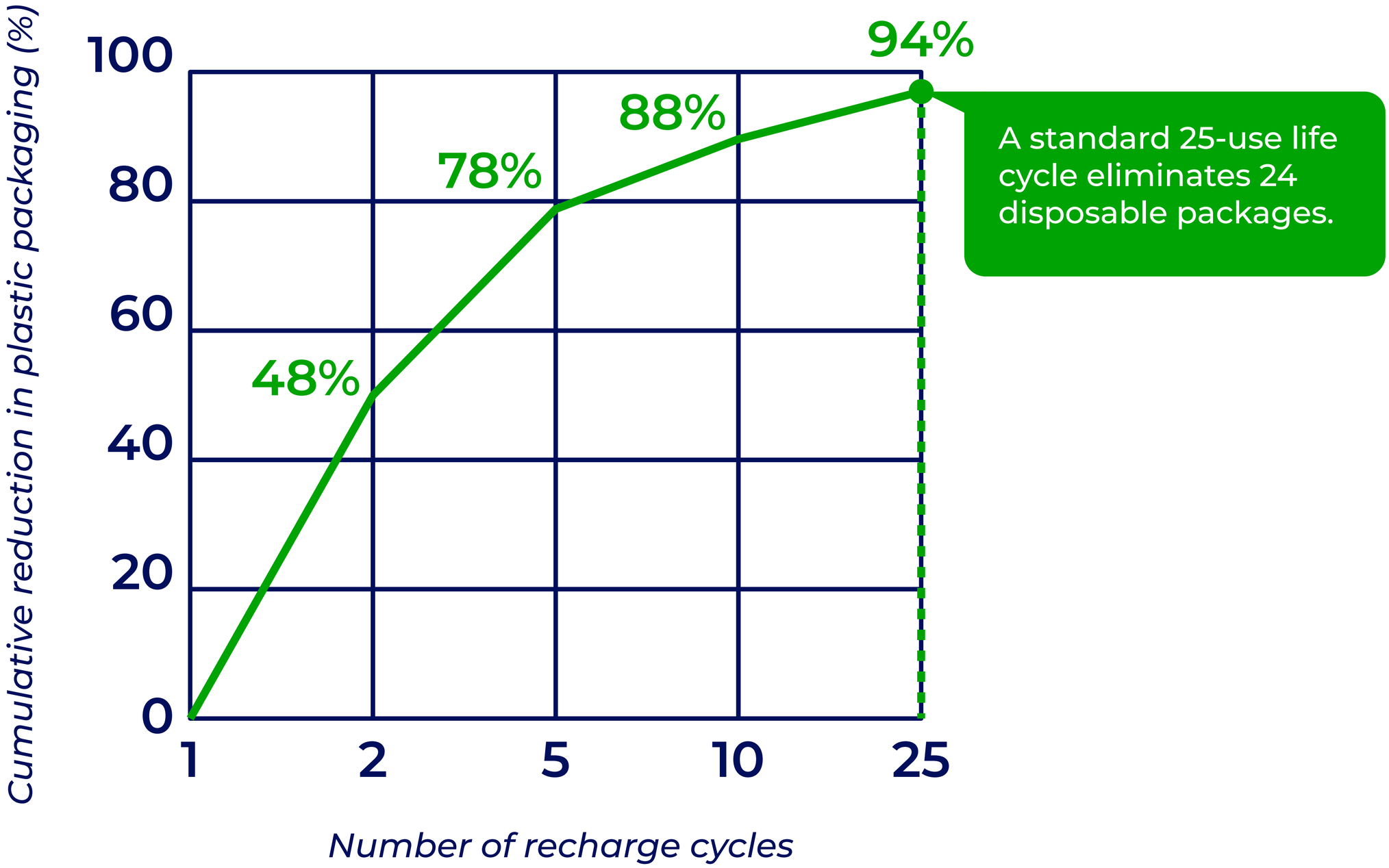
Conventional model

The Eco-Z Recharge Bag delivers the same amount of product using only 0.071 oz of plastic packaging.



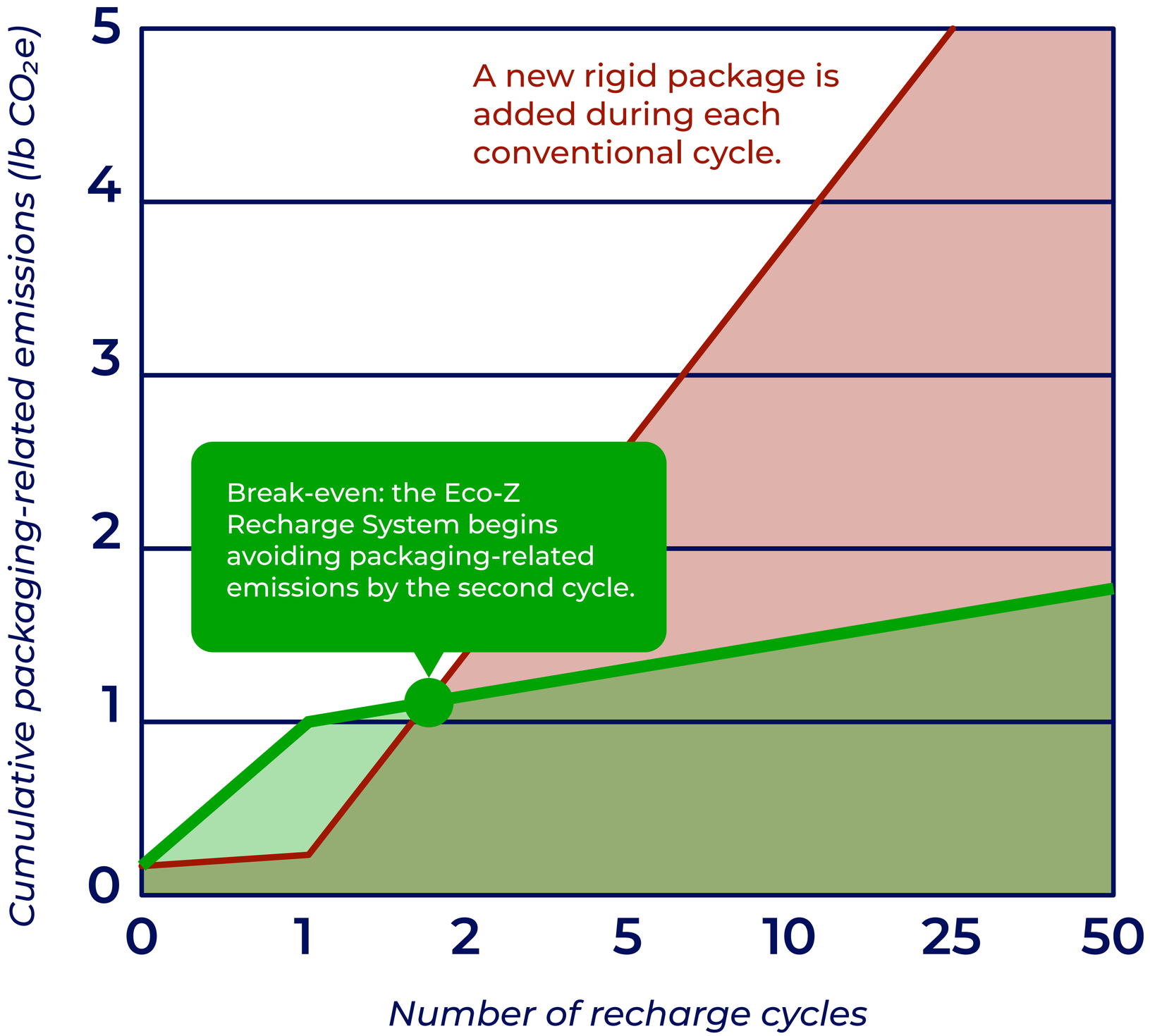
Each Eco-Z refill bag uses approximately 98% less plastic packaging by weight than the modeled 33.8 fl oz conventional single-use package: 0.071 oz versus 3.53 oz.

The reuse curve



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Packaging carbon break-even



Packaging-related CO_2e avoided

After 5 uses:

77.8% lower

(1.50 lb CO_2e avoided)

After 25 uses:

93.8% lower

(9.04 lb CO_2e avoided)

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B2B logistics: move packaging, not empty volume



One full truckload

26 pallets × 1,200 unfilled conventional bottles = **31,200 packaging units**

One Eco-Z pallet

23 cases × 1,400 unfilled Eco-Z
Recharge Bags = **32,200 packaging units**

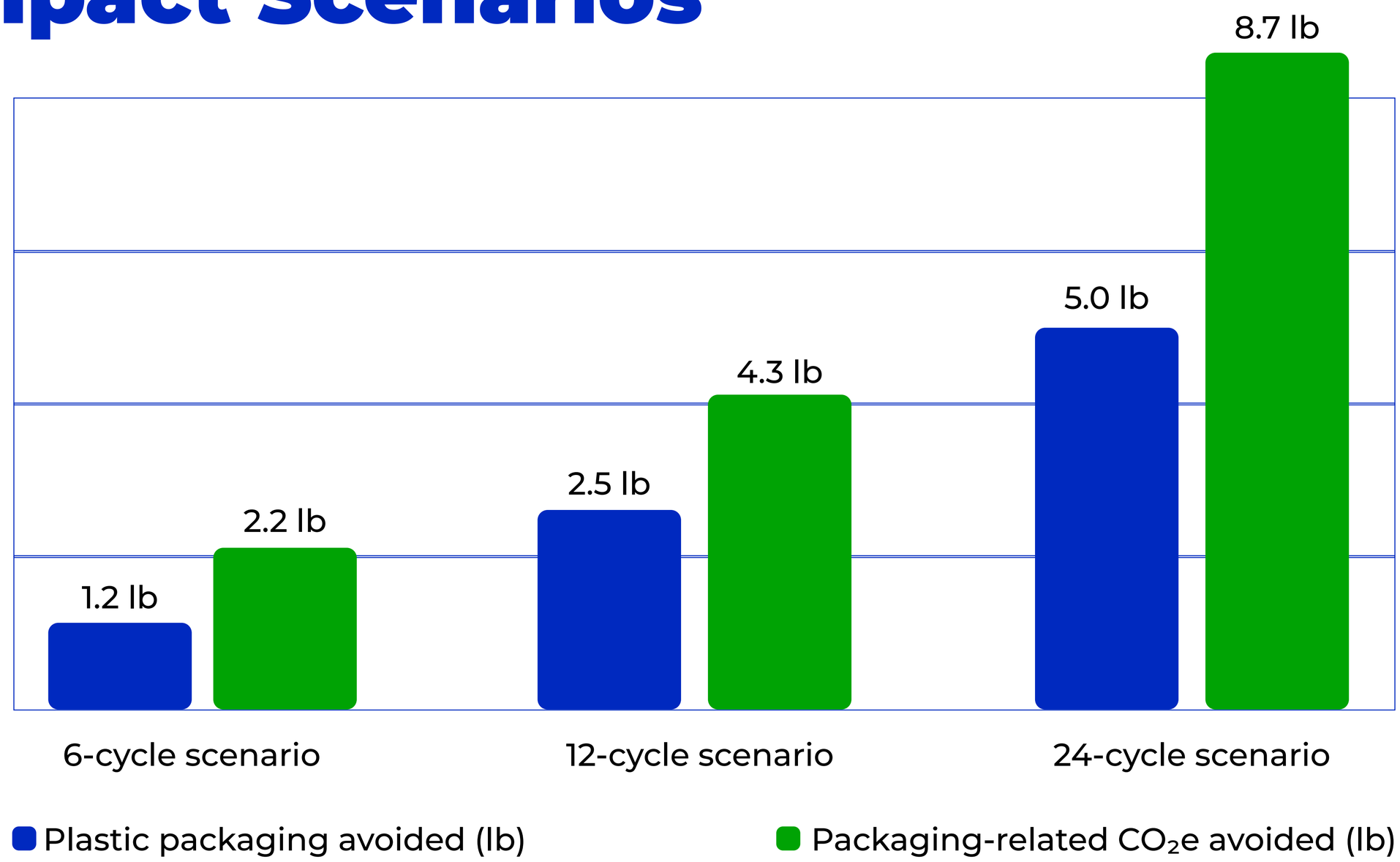




One pallet of unfilled Eco-Z Recharge Bags supplies approximately the same number of packaging units as **1.03 truckloads of unfilled conventional bottles.**

This represents a major reduction in inbound packaging volume and pallet requirements at the filling plant.

Illustrative Consumer Impact Scenarios

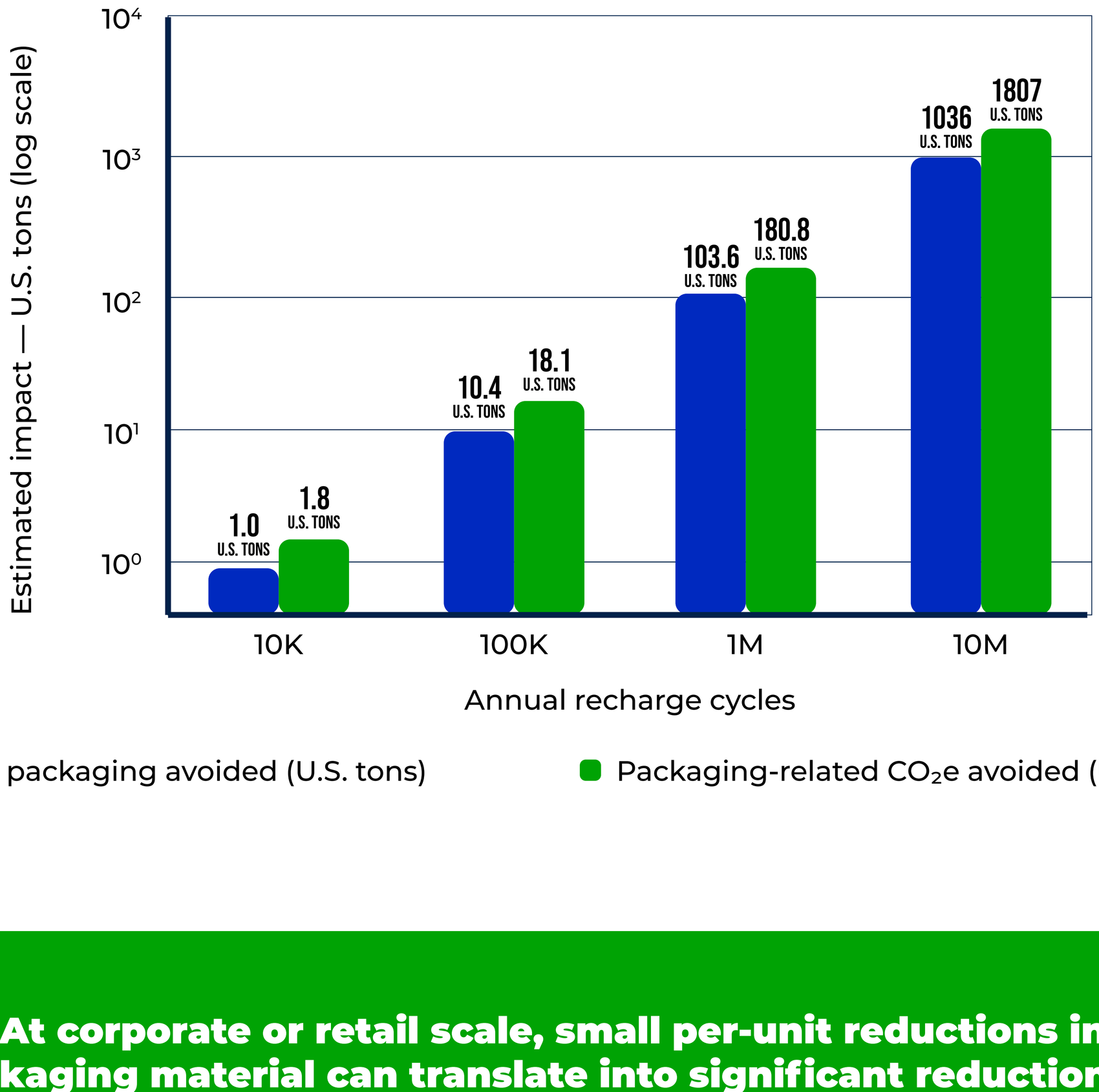


Illustrative 12-cycle scenario

Replaces the need for **12** additional conventional rigid packages
Avoids approximately **2.5 lb of plastic** packaging
Avoids approximately **4.3 lb CO_2e** in packaging-related emissions

Each Eco-Z Recharge Bag is designed to replace the need for one additional single-use rigid package under the comparison used in this report.

The multiplier effect: Commercial-Scale Impact



At corporate or retail scale, small per-unit reductions in packaging material can translate into significant reductions in packaging tonnage and inbound logistics requirements.

Potential areas of packaging-related emissions reduction

1 Materials and procurement

Purchased goods and services

Lower packaging-material mass per recharge cycle.

2 Inbound logistics

Upstream transportation and distribution

May reduce pallets and truckloads required for inbound packaging.

5 Operational waste

Waste generated in operations

Lower volume of packaging waste at commercial facilities.

9 Downstream logistics

Downstream transportation

Lower packaging mass in downstream recharge shipments.

12 Product end of life

End-of-life treatment of sold products

Shift from heavy rigid waste to lightweight flexible Recharge Bags.

Illustrative B2B impact at 1 million recharge cycles

Based on a modeled scenario of 1 million Eco-Z recharge cycles and 25 uses per reusable Bottle, the model estimates the following outcomes:

103.6
U.S. tons of plastic packaging avoided

180.8
U.S. tons CO_2e in estimated packaging-related emissions avoided

802
inbound packaging pallets avoided

Eco-Z not only reduces your environmental footprint; it also inherently reduces logistics and operating costs.

And the economics of packaging are changing. ➡

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THE NEW COST OF PACKAGING

Extended Producer Responsibility is changing who pays for packaging waste.

For decades, the cost of managing packaging waste was largely borne by municipalities and taxpayers.

That model is changing.

Packaging Extended Producer Responsibility (EPR) laws shift some or all of the financial responsibility for collection, processing and recycling toward the companies that place packaged products on the market.

As of 2026, seven U.S. states have enacted comprehensive packaging EPR laws: **California, Colorado, Maine, Maryland, Minnesota, Oregon and Washington**. The requirements are being implemented state by state and include combinations of producer registration, packaging reporting, program membership and producer fees.

This is no longer theoretical.

MARKET	REGULATORY SIGNAL
Oregon	Producer fee obligations began in July 2025
Colorado	Producer dues began in January 2026
California	2026 includes pre-program early fees; the full program is scheduled to begin in 2027
Maryland	Producers were required to register/report in 2026; reimbursement of program costs begins from 2028
Minnesota	Producer registration/reporting is already underway; producers begin funding at least 50% of eligible net program costs in 2029, rising thereafter
Washington	Producer registration/reporting began in 2026, with pre-program funding and a planned rollout toward 2030

California shows the scale of the change

California's SB 54 is particularly significant.

The state's program requires the Producer Responsibility Organization to remit $500 million per year to the California Plastic Pollution Mitigation Fund beginning in 2027, funded through the EPR framework. California also requires the system to achieve a 25% reduction in plastic packaging at source by 2032, alongside recycling and recyclability/compostability targets.

$500M / YEAR

California Plastic Pollution Mitigation Fund requirement

25%

Plastic packaging source-reduction target by 2032

Why Eco-Z Matters in an EPR World

Most conventional cleaning formats require another complete package when the product runs out. **Eco-Z changes that model.**

Conventional model



Product ends → Bottle is replaced
→ Another full package enters the market



Product ends → Bottle stays
→ Only the sealed Eco-Z Bag is replaced

The Eco-Z System uses a reusable Bottle and significantly smaller replacement packaging, **reducing plastic by 98%.**

Circular Action Alliance explains that fees generally consider the **type and quantity of material supplied**, with additional adjustments possible through eco-modulation.

That means packaging weight, material choice and design are increasingly becoming **economic and compliance variables**, not simply environmental ones.

Less packaging today can mean less exposure tomorrow.

Not an exemption. Not a guaranteed fee reduction. A fundamentally different packaging strategy.

Eco-Z was designed to reduce the package that has to be replaced.

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