



The Zero-Plastic Restaurant Audit: 2025 Impact & Operational Report

A Year-End Analysis of Sustainable Transition at SHIA

Reporting Period: Fiscal Year 2025

Collaborators: SHIA & OpenTable Data Insights

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1. Executive Summary

What is the actual cost of operating a plastic-free restaurant? To answer this question at SHIA, we identified and replaced 31 common plastic items that are standard in the hospitality industry. Our goal was to prove that a restaurant can eliminate single-use plastics while maintaining a high-quality, fine-dining experience.

As we conclude the 2025 fiscal year, we are proud to report that we have successfully diverted approximately 915 kg (2,017 lbs) of plastic from the waste stream. This was achieved while serving 18,298 guests a premium tasting menu experience. This report shares our operational findings, the financial investment required, and a roadmap for others to follow.

2. Financial Reality of “Green”

To determine the "Green Premium," we compared our 2025 procurement against traditional market data. This analysis includes the base cost of 31 identified items plus an R&D buffer for product testing.

Metric	Zero-Plastic Actuals (w/ R&D)	Traditional Plastic Baseline (Est.)
Total Annual Procurement (31 Items)	\$28,836.10	\$9,248.70
Raw Cost Per Guest (note: 18,298 guests dined in 2025)	\$1.58	\$0.51
Difference to go plastic free	\$1.07 (Per guest)	—

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The 2026 "Green Premium" Target: \$2

Although the raw material increase is \$1.07 per guest, SHIA will implement a \$2 sustainability contribution for 2026. This \$0.43 reinvestment margin covers the "soft costs" of a zero-plastic model: a 10–20% R&D buffer for sourcing new innovations and the specialized labor required to maintain permanent assets. By moving away from a "buy-and-toss" economy, we are reinvesting in the human intention required to season, sanitize, and preserve our durable stainless steel and carbon steel inventory.



3. Operational Findings: Beyond the Invoice

Cutting plastic is not a simple trade; it requires re-engineering how a kitchen functions.

- **Intentional Design:** By replacing plastic squeeze bottles with traditional spoon-plating, we removed synthetic waste while elevating the artisanal quality of our presentation.
- **Efficiency Gains:** Switching to high-density recycled sawdust charcoal (Prime 6) increased fuel longevity, helping to offset its higher unit cost by reducing total consumption per service.
- **Durability as an Asset:** High upfront costs represent an investment in longevity. Our transition to stainless steel and wood has created a suite of permanent assets that do not crack or melt, lowering our long-term replacement overhead.

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4. Environmental Impact

The diversion of **915 kg (2,017 lbs)** of plastic is a direct mitigation of long-term environmental toxicity.

- **Carbon & Petroleum:** SHIA's 2025 diversion saved ~1,800 liters of crude oil and mitigated 2.7 Metric Tons of CO2 emissions.
- **Microplastic Prevention:** By eliminating plastic cutting boards and storage (LDPE/PP), we have removed the primary source of microplastic shedding within the food preparation process. Traditional restaurant plastics fragment into micro-shards that remain in the ecosystem for centuries.

5. 2026 Roadmap

Our plan for 2026 is to build on what we learned in our first year and take the next step by looking outside our own walls. We want to show that being plastic-free is a constant evolution of how we work with our partners and our guests. As we move into our second year, we will focus on upstreaming plastic and cut inbound plastic packaging and enhance internal operations as we share our guests the updated cost increase for the going green cost in our menus.





Appendix: Methodology and Scientific Reference

1. Cost Comparison for Replaced Items at BOH

Plastic			Non-Plastic		
Item	Note	Total in a year	Item	Note	Total in a year
Cling Wrap	(18 in roll-2000ft) (one every 1.5 months)	\$196.56	Fabric/ Beeswax	Cheesecloth, Black Trash Liners, Compostable Liners, ½ Sheet Parchments cut and used throughout the year	\$2,100.65
Deli Containers	Quart (monthly), Pints (1.5 months), Cups (monthly)	\$1,783.68	Containers	Various glass and steel containers used throughout the year	\$2,758.00
Cutting Boards	26.81 each (Bought 3 boards)	\$80.43	Cutting Board	Wood and rubber cutting boards to replace plastic cutting boards	\$624
Squeeze Bottles	7.44 each 6 pack (Bought 2)	\$14.88	Spoon Plating	Using Spoon instead of squeeze bottles	\$26.84
Trash Bags	(55 Gal) 2/day (520/yr) \$45.00 / case of 100	\$540	Compostable Bags	Various sizes of compostable bags that we use for trash bags	\$1,052.00
Gloves	54.95 each/cs of 10 boxes(100 gloves per box) (2 cases a month or 1 box a day)	\$1,318.80	Washing Hands	We wash hands and improved our handwashing station for improved hygiene setup and have gotten towels for clean hands	\$1,172.25
To-Go items	56.70 each cs(150 pieces) (every 2 months) + 44.70 each/cs (1000 pieces) (one every 1.5 months)	\$992.80	No to-go options	We do not provide to-go but we used one to-go insulated package to store our goods. We do not do to-go foods.	\$104.00
Portion Cups	Bags - 4 cases / Cups with Lid 4 sets / case	\$500	N/A	We bought a compostable zip bags	\$591
Cryovac Bags	Large (1000), Medium (2000), Small (6000)	\$724.35	N/A	We do not use this and focus on cooking fresh	0
Silicone Molds & Mats	Molds (3 per year), Mats (3 per year)	\$90	Sub paper	We use sub paper or silica pack with limestone instead muslin cloth tea bags to ensure there are no moisture	\$150
Nonstick Pans	4 per year	\$120	Steel Pans	We use various steel pans. Here is an estimation.	\$270
Spatulas	6 cases per year	\$72	N/A	We use other cooking methods and use steel products	\$180
Knives	Average.	\$75	Knives	SHIA chefs bring their own steel knives without plastic	\$0
N/A			Staff Labor Time	Dishwashers spend 5 hours per week more going through trash recycling and cleaning. Line cook spends 3+ hours more cooking food w/o plastic.	\$8,736.00

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2. Cost Comparison for Replaced Items at FOH

Plastic			Non-Plastic		
Item	Note	Total in a year	Item	Note	Total in a year
Permanent Markers	Estimated usage around the year	\$180	Markers	Refill markers and sustainable steel markers	\$323.80
Spray Bottle	About 6 per year	\$30	Spray Bottles	Steel and biodegradable materials	\$72
Laminated Menus	About 200 a year	\$500	Menus	Recycled paper made menus. Custom made at SHIA.	\$500
Trash Bins	About 4 a year	\$180	Trash Bins	Steel and metal trash bins that works and replaceable	\$1,160
Sever Trays	About 10 a year	\$150	Server Trays	Steel server trays	\$220
Plastic Straws	1 large box usually carries enough for the year	\$35	Straws	Biodegradable straws. Serving drinks without straws.	\$34
Plastic Stapler	2 orders per year	\$24	Stapler	Metal staplers and also changing routines to use less staplers.	\$41
FOH Organizers	2 orders per year	\$96	FOH Organizers	Gone through a few iterations but found wood organizers	\$213
Silverware Organizer	2 orders per year	\$60	Silverware Organizer	Wood and bamboo made organizers	\$148
Soap Dispenser	2 orders per year	\$150	Soap Dispenser	Refill soap and purchase metal and ceramic dispenser	\$450
Check Presenter	40 orders per year	\$220	Check Presenter	Wood, leather, and steel check presenter	\$330
Napkins	6 set orders per year	\$390	Napkins	Cotton napkins. We also went through various iterations.	\$515
Hangers	60 orders per year	\$30	Hangers	Metal and wood hangers.	\$70
Adhesive Tape	Roll a week. 12 big sets a year	\$76.20	Adhesive Tape	Masking tape and painters tape to replace plastic tape	\$151
Interior Paint	3 large orders in a year to repaint	\$180	Interior Paint	Plastic free paints used to paint the restaurant.	\$255
Broom/Mop	4 orders a year for both	\$136	Broom/Mop	Wooden handle broom and mops.	\$543
Umbrellas	4 orders a year for both	\$28	Umbrellas	Metal umbrella in case for customers who need them	\$100
Candles	5 large orders a year	\$275	Candles	Various iterations of candles that are sustainable	\$931

Additional \$5000 was spent to replace plastic cleaning materials, in R&D, and trying new non-plastic packaging and storage.

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3. Comparative Material Longevity

When we say a plastic item takes 450 years to "break down," it is important to understand that in traditional landfill conditions, plastic never truly biodegrades. It only fragments into smaller micro-shards.

Operational Item	Traditional Plastic Life	SHIA Alternative Lifecycle
Kitchen Cling Wrap	500 - 1,000 years	12 months (Beeswax/Fabric)
Deli/Storage Containers	450 years	Permanent Asset (Stainless Steel)
Service Straws	200 years	90 days (Sugarcane/Bamboo)

4. Footnotes & Sources

¹ NOAA Marine Debris Program. (2024). How Long Does It Take for Trash to Decompose? National Oceanic and Atmospheric Administration.
<https://marinedebris.noaa.gov/discover-issue/trash-talk-how-long-does-it-take-trash-decompose>

² Yadav, V., et al. (2023). Cutting Boards: An Overlooked Source of Microplastics in Human Food. Environmental Science & Technology, American Chemical Society.
<https://pubs.acs.org/doi/10.1021/acs.est.3c01931>

³ Center for International Environmental Law (CIEL). (2024). Plastic & Climate: The Hidden Costs of a Plastic Planet.
<https://www.ciel.org/reports/plastic-health-the-hidden-costs-of-a-plastic-planet>

⁴ World Wildlife Fund (WWF). (2024). Lifecycle of Plastics and Environmental Impacts.
<https://www.worldwildlife.org/magazine/issues/fall-2019/articles/plastic-pollution-is-suffocating-the-ocean>