

TrashBack

<u>Team Member Name</u>	<u>Year</u>	<u>Major</u>
Andres Pena	2026	Sustainability Management
Bobby Marlatt	2026	Psychology
Max Engel	2026	International Business
Amir Brown	2026	Finance
Lucas Luzuriaga	2026	International Business

Advisor(s): Astrid Schmidt-King, Stephon Smith, Donald Manekin

Topic Title: Trash Turnaround: Incentivizing community waste solutions in urban areas

Audience: Veolia, City of Baltimore (Public Health & Sustainability)

Sustainable Development Goal

SDG 11: Make cities and human settlements inclusive, safe, resilient, and sustainable

Executive Summary

Baltimore faces a persistent waste challenge. The city spends over \$30 million annually on sanitation and litter cleanup, yet Baltimore still ranks as the dirtiest city in America with 47,295 sanitary related complaints in 2025 according to HouseFresh. This continues to strain public resources and negatively impact neighborhoods in or around the city center. Current systems rely primarily on enforcement and cleanup crews, while residents have limited incentives to change disposal behavior. TrashBack proposes a waste incentive system that makes responsible recycling simple and rewarding.

TrashBack introduces a solar-powered mobile recycling unit designed specifically for bottles and cans. Built on a compact trailer system, the unit can be easily deployed at high-traffic locations such as bus stops, parks, and shopping areas. Residents deposit recyclable bottles or cans into the unit, where reverse-vending technology scans the materials. Smart fill sensors transmit data to a monitoring platform, allowing the city to track usage and adjust placement. The system operates through a digital credit model. When a resident deposits recyclable materials, credits are issued through a QR code or text message. During the pilot phase, these credits can be redeemed for public transit bus passes, linking recycling behavior with transportation access.

TrashBack builds upon Baltimore's existing infrastructure and partnerships. The program seeks to collaborate with Veolia, which has worked with the Baltimore City Health Department and Office of Sustainability on environmental initiatives since 1984. Leveraging these long-standing relationships provides operational expertise, logistical support, and credibility for launching an effective pilot program. TrashBack addresses multiple urban challenges simultaneously. It reduces litter, strengthens recycling participation, improves access to public transit, and supports environmental public health goals. Building on the recognition of Baltimore's Mr. Trash Wheel, TrashBack extends the city's leadership in innovative waste management while empowering residents to create cleaner neighborhoods.