

# APPLICATION OF SUSTAINABLE MATERIALS MANAGEMENT PRACTICES TO REDUCE FOOD WASTE AT THREE KANSAS EDUCATIONAL INSTITUTES

## Company background

The Kansas State University Pollution Prevention Institute (PPI) partnered with the Johnson County Department of Health and Environment (JCDHE) to assist three educational institutions in Kansas with reducing food waste: a private nonprofit school, a public school district and a public community college. Enrollment at these institutions ranged from fewer than 200 students to more than 10,000 students.

## Project background

Food waste is a significant global issue with wide-ranging consequences for our environment, economy and society. In the U.S., about one-third of all food produced is wasted each year, valued at nearly \$444 billion<sup>1</sup>. This waste produces more greenhouse gas emissions than 42 coal-fired power plants, uses more cropland than California and New York combined and consumes as much water and energy as 50 million homes<sup>2</sup>.

Recognizing this issue's importance, PPI partnered with JCDHE on an EPA Region 7 Sustainable Materials Management grant. The two-year grant's objective was to help Kansas educational entities identify and implement projects to reduce, reuse or recycle food waste.

In the first year, PPI and JCDHE staff conducted on-site visits at each institution to observe kitchen and cafeteria behaviors, interview key personnel and estimate pre-consumer and post-consumer waste by conducting waste audits. PPI then followed up on each audit with a report containing waste reduction recommendations aligned with the EPA's food recovery hierarchy. In the second year, PPI and JCDHE staff revisited each institution for a follow-up audit to gauge the effectiveness of any implemented changes.

## Incentives to change

Schools can play a pivotal role in reducing and diverting food waste within a community. Educating students in the lunchroom and classroom about food waste can empower them and their families to make more informed decisions about food. This not only paves the way for a more sustainable future but also offers immediate financial benefits for schools. By reducing food waste in cafeterias, schools can save on food purchasing costs and waste disposal fees. Making sure students get adequate nutrition by increasing the amount of quality food they consume can potentially enhance their academic performance and benefit them long after graduation.

## PROJECT SUCCESSES

Most students and staff at the three institutions were highly interested in the efforts of PPI and JCDHE staff to reduce food waste. Staff in every observed kitchen followed the first-in-first-out inventory management system and routinely re-served high-quality leftovers or incorporated them into new dishes. Each observed public school adhered to the USDA's "offer versus serve" lunch model and made use of cafeteria share tables.

One institution used a third-party vendor to compost kitchen and cafeteria organics while the other two handled composting on-site. One of the institutions only composted waste on-site for educational purposes. Composting inefficiencies were discovered at one institution while on a site visit. Staff promptly addressed the issues, improving compost quality and increasing food waste diversion from the local landfill.

One institution revamped its food service program, introducing fresher, locally sourced ingredients to enhance meal quality. As a result, students left less uneaten food on their trays, reducing waste by over 0.2 pounds per student each meal.

Additionally, staff at one institution planted a community orchard to combat food insecurity in the nearby area, with plans to establish several vegetable and herb gardens in future years. These green spaces will be integrated into academic curriculums to deepen students' understanding of the food system. Staff also have plans to expand their composting efforts to benefit the orchard and garden soils.

A separate institution is rolling out a kitchen waste tracking system, enabling kitchen staff to pinpoint and address primary sources of waste. They increased their donations of leftover food to local food pantries and are also considering sourcing more of their ingredients locally.

## PROJECT BARRIERS

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Every staff member interviewed by the Pollution Prevention Institute cited limited staffing as the main challenge in launching and sustaining food waste reduction initiatives. They specifically pointed to the COVID-19 pandemic as a major cause of these shortages, and several members mentioned that the wages currently offered for new positions are not high enough to attract or retain new employees.

A significant number of staff members described taking on additional duties to ensure uninterrupted service due to these shortages, limiting the amount of time they had to consider new initiatives related to food waste. This had other impacts as well – nearly all kitchens had switched from reusable trays and utensils to disposable options because they lacked adequate staffing to cover dishwashing duties.

This primary barrier was present throughout the full two-year grant program, and it impacted each institution's ability to act on waste reduction opportunities.

Staff at the public school district highlighted regulatory barriers to reducing food waste tied to the USDA's National School Lunch Program. As an example, the program mandates that students receive at least half a cup of vegetables or fruit at lunch. Observations by PPI and its partners showed that students often chose the fruit option but frequently discarded the fruit after lunch. Although the "offer versus serve" approach has significantly reduced school food waste, policy makers can improve the program further.

For larger institutions, contractual issues with vendors emerged as a roadblock. Sustainability personnel could not mandate food waste projects on food service vendors without potentially violating service contracts and straining vendor relationships. When these contracts come up for renewal, any waste-focused amendments would first need internal approval before negotiating with vendors.

## LESSONS LEARNED

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One of the key takeaways from this grant program is that changing behavior, whether among students, staff or other stakeholders, can be complicated. It often requires more than just raising general awareness or boosting motivation, it also requires a foundational system that offers practical, accessible and sustainable opportunities for action.

For lasting change, the approach should make sense to all involved parties, be written into enforceable internal policies and conserve resources, such as time and effort, to ultimately make it more convenient for stakeholders to maintain the new practice than to fall back into old habits. Additionally, changes should be made in small, manageable steps – attempting too much too soon can be detrimental to long-term success.

An added factor is that what works at one location may not work at another. Every institute differed in staffing numbers, campus size, budget and management. Recommendations for one institute may not have been applicable to another due to these factors and others, such as local vendor access and ordinance constraints.

Even if all stakeholders support change, it can be an ongoing process to ensure change is made. Staff at every organizational level face different, and at times, competing responsibilities and priorities. It may take multiple meetings with stakeholders to ensure a proposed change takes root.

While not every recommendation was implemented, each institution recognized the importance of food waste reduction and expressed interest in future assistance, prompting PPI to develop a list of waste-related resources. This list can be found on PPI's sustainable materials management webpage, located at: [sbeap.org/waste-management/food-recovery](https://sbeap.org/waste-management/food-recovery).

<sup>1</sup> [https://insights-engine.refed.org/food-waste-monitor?break\\_by=food\\_type&indicator=us-dollars-surplus&view=detail&year=2021](https://insights-engine.refed.org/food-waste-monitor?break_by=food_type&indicator=us-dollars-surplus&view=detail&year=2021)

<sup>2</sup> <https://www.epa.gov/land-research/farm-kitchen-environmental-impacts-us-food-waste>