

WOODWARD RESOURCE CENTER



CLAY HUGEN
CHEMICAL ENGINEERING
IOWA STATE UNIVERSITY

COMPANY PROFILE

Woodward Resource Center (WRC) is a state facility operated by the Iowa Department of Human Services. Founded in 1917, WRC has a rich history and has been known by many names and functions. Currently, WRC provides services for approximately 135 individuals as a licensed Intermediate Care Facility. They employ approximately 450 people in this task.

The facility also leases building space to Woodward Academy, a juvenile treatment facility. They operate as a separate entity of WRC and employ 235 staff to provide care and education to approximately 240 students and various staff. Woodward Academy operates 24 hours per day year-round.

PROJECT BACKGROUND

Campus Food Services provide three meals daily to the individuals on campus through a meal delivery system. These meals are regulated by the National School Lunch Program and specifically designed for each individual by a team of three full-time dietitians. They also serve lunch and supper to the Woodward Academy students during weekdays and provide the materials for students to prepare breakfast and weekend meals in dormitory kitchens. Solid waste is generated across campus with recycling processes in place for paper and cardboard.

INCENTIVES TO CHANGE

Woodward Resource Center's goal is to become a more sustainable institution. Waste audits were conducted and it was determined that opportunities exist to reduce food and other solid waste. Through process improvements, implementation of new programs, and expansion of the current the recycling infrastructure, WRC can limit their environmental impact by reducing or diverting waste from the landfill.

RESULTS

Utilization of Forecasting in Menu Planning and Preparation: A common challenge in food service is accurately estimating the volume of food required. Forecasting is the use of historical data to predict future demand. The intern developed an Excel-based tool that can be used to track the amount of food served for each menu item and help calculate preparation amounts. Tracking consumption data will allow WRC to prepare sufficient amounts of food and limit leftovers and waste. Implementation would require each cafeteria to have a printed copy of the spreadsheet for each meal and to record the data. The sheets would then need to be collected and input to build a data base for tracking.

Food Waste Education: Curriculum was developed to guide classroom education on the topic of food waste. Developing an understanding of healthy eating habits and the environmental impact of food waste could help students make conscious decisions during meal times and reduce wasteful behavior. It is important that waste education is implemented with forecasting to reduce the amount prepared if less is taken in line.

Food Donation: Most of the food that has been prepared but not served is landfilled. It is recommended that this nutritionally valuable food be donated, in accordance with the Bill Emerson Good Samaritan Food Donation Act. A flash cooler and refrigerator storage exists at WRC for safe food handling for the donated product and a local non-profit organization would pick up the food weekly.



Increased Eating Times: It was observed that students have approximately 15 minutes to eat after they sit down for lunch. It is recommended to increase eating times to a minimum of 20 minutes. It may be necessary to change serving processes to speed serving-line flow.

Use of Reusable and Compostable Serving Containers: WRC uses plastic serving containers to speed serving-line flow and control portion sizes. Reusable bowls could eliminate this waste stream and be easily washed and dried in the tray machine after each meal. Fruit and vegetable servings could be pre-dished by the server in reusable bowls to control the serving size. This method could also help with forecasting and would reduce food waste while also reducing this plastic waste stream. Each item replaced would result in diverting approximately 0.62 tons of plastic trash from the landfill annually. This figure is for the 6 oz. side dish, the most commonly used container at the cafeteria. Waste diversion will depend on which bowl is being replaced. When necessary, compostable paper products would be a more environmentally sustainable option. The annual cost savings potential is per item that is converted to a reusable container.

Expansion of the Recycling Program: Cardboard and paper recycling occurs inconsistently on some parts of the Woodward Resource Center campus. Expanding the pickup route for paper recycling campus-wide and including #10 tin cans generated in the food services locations could reduce landfill waste. Additional recycle receptacles would need to be strategically located and facility staff would need to be educated on the new process.

Optimization of Trash Pick-ups: A study showed that many of the dumpsters did not collect a significant amount of trash daily and could be eliminated. Additionally, the pickup frequency could be reduced by half. In addition to saving tipping fees, this change will also reduce fuel usage and in turn, emissions produced by the garbage hauler.



The success of this implementation is dependent on the recycling expansion first being implemented. A new or modified contract with the hauler would need to be implemented to reduce pick-up frequency and the bins would need to be moved to optimize the pick-up efficacy.

Implementation of a Composting Program: Food waste from serving trays could be converted to a valuable soil amendment through composting. The intern researched and identified a composting system and the material handling equipment necessary to accommodate the output of waste at the facility. The finished compost product could be used on campus grounds or bagged and sold at the campus store. It is recommended that an in-vessel composting system be installed on campus. Implementing this recommendation would first require approval and budgeting for the capital expense of the equipment.

Miscellaneous Cafeteria Process Improvements: Measures such as using smaller serving spoons, active employee training, and food waste discussion during meetings could increase efficiency and reduce food waste in the cafeteria.

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
FOOD FORECASTING	\$3,254	0.5 tons	RECOMMENDED
FOOD WASTE EDUCATION	\$6,679	0.25 tons	IN PROGRESS
FOOD DONATION	\$416	13 tons	RECOMMENDED
INCREASING EATING TIME	\$240	7.5 tons	RECOMMENDED
USE OF REUSABLE SERVING CONTAINERS	\$2,918	0.62 tons	RECOMMENDED
EXPANSION OF THE RECYCLING PROGRAM	\$3,040	56 tons	RECOMMENDED
OPTIMIZATION OF TRASH PICK-UPS	\$13,950	17.28 metric tons CO ₂	RECOMMENDED
COMPOSTING PROGRAM	N/A	70.6 tons	RECOMMENDED
MISCELLANEOUS CAFETERIA PROCESS IMPROVEMENTS	\$6,679	0.25 tons	RECOMMENDED

