SMITHFIELD MASON CITY

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COMPANY PROFILE
Founded in 1936, Smithfield Foods is now the world's largest pork processor and hog producer. The food company employs more than 50,000 people worldwide. Common household names such as Eckrich®, Nathan's Famous®, and Healthy Ones® are all core Smithfield brands, making the company the primary producer of packaged pork products in the United States. The Mason City facility produces lunch meat, smoked hams, and cook-in-water deli hams. With 275 employees, it operates two primary shifts and is open approximately 300 days per year.

PROJECT BACKGROUND
The focus of the project was to examine the solid waste streams at Smithfield Mason City and identify areas for improved waste handling and disposal. With cardboard and plastic being the primary types of waste, the project goal was to reduce those streams at the source and expand the current recycling procedures. The improved segregation of recyclables based on both material type and contamination level has the potential to increase recycling practices and economic savings. The primary concern with the project was the contamination of the recyclable material due to food products and dissimilar materials, making reuse and recycling challenging.

INCENTIVES TO CHANGE
One of Smithfield's three core principles is responsibility. At a corporate level, a responsibility to sustainability is part of the company's culture. Eight Smithfield facilities are currently at a zero-waste-to-landfill status, with the Mason City location joining that list in August 2016. When the facility became landfill free, an improved recycling procedure was implemented including a Waste to Energy system. With time, compliance to this recycling procedure declined. Also, the recycling partner has implemented policy changes to the separation requirements and the minimum recyclable contamination level. A lack of communication with them has caused material intended for recycling to be diverted to Waste to Energy. Changes to the current procedure will help increase the recycling of primary waste streams and reduce disposal costs.

RESULTS
HDPE Separation: Smithfield sends many of their recyclable items to a separate facility to be recycled for a rebate. It was noticed that the weights listed on statements from the facility for high-density polyethylene (HDPE), a plastic that receives a high rebate, were very low. The identified issue was cross-contamination of materials. Multiple grades of plastic combined resulted in HDPE being counted as a lower grade of plastic and not receiving the high rebate. It also resulted in some HDPE going to Waste to Energy. Streamlining the separation to collect three specific grades of HDPE would eliminate confusion about what can be recycled, increase the rebate available to Smithfield, and divert recyclable material from Waste to Energy.

Combo Rebate: Large cardboard shipping boxes called combos currently are broken-down and compacted in the two compactors on site. These can be recycled for a rebate, but the recycling company offers a better flat rate for combos that are clean, collapsed, and stacked to be reused in their facility. Approximately half of the combos Smithfield generates are clean and could be recycled in this way, with the other half going to the compactor and receiving a rebate based on weight. Adjusting the process to include both of these recycling methods would allow clean combos to be reused instead of pulped. There is also a time and safety benefit. Collapsing the combos takes much less time than breaking them down and results in less physical strain on employees. Additionally, combining methods increases Smithfield's annual profit on cardboard.

Plastic Baling: A plastic baler is used onsite to send bales of plastic film to the recycling facility. Currently the majority of the bales are made from excess plastic packaging, which is contaminated due to contact with meat and the preservative used. This leads to contaminated bales, which the recycling company sends to Waste to Energy after the bales reach their facility. Much of the clean plastic film at Smithfield is currently going to Waste to Energy due to miscommunication with the recycling facility. A change in the procedure is recommended to bale the clean plastic only and send the contaminated packaging directly to Smithfield's Waste to Energy compactor. This would result in a rebate on bales, divert clean plastic from Waste to Energy, and save money on disposal fees.

Bag Tail Reductions: The excess plastic on product packaging is known as a bag tail. Long bag tails result in additional plastic waste and tend to clog the equipment designed to collect them. Due to contamination, all waste generated from tails goes to Waste to Energy and cannot be recycled. Reducing the initial length of product bags would reduce the plastic waste created from bag tails. Bag lengths and widths differ with each product packaged and with help from the bag supplier, five products were identified as having the potential for bag-size reductions. The smaller bags would save the company money in both purchasing costs and disposal costs, and would reduce plastic waste at the source. Next steps include further product testing to ensure the recommended smaller bag sizes provide sufficient packaging for Smithfield's products and communication with the bag supplier on necessary size adjustments.

Plastic Cutlery: Smithfield has a full-service kitchen in their cafeteria allowing employees to purchase breakfast or lunch daily. There is plastic cutlery available in the middle of the cafeteria that is used often. It was noticed that cutlery gets consumed very quickly, either by employees buying lunch, employees bringing lunch from home, or sometimes by employees taking extra utensils home. Moving the cutlery into the kitchen and distributing utensils along with purchased meals would reduce the amount of plastic cutlery down to the number of meals sold. Employees bringing breakfast or lunch from home would be encouraged to pack their own flatware, and the option of taking utensils home would be eliminated. This adjustment would reduce purchasing costs of cutlery, disposal costs of plastic, and the amount of plastic going to Waste to Energy annually. To implement, kitchen staff and employees will need to be informed of the new procedures and purchasing orders will need to be adjusted.

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
HDPE SEPARATION	$1,805	2.5 tons	IMPLEMENTED
COMBO REBATE	$17,773	6.0 tons	IN PROGRESS
PLASTIC BALING	$3,227	8.0 tons	IN PROGRESS
BAG TAIL REDUCTION	$3,074	0.3 tons	RECOMMENDED
PLASTIC CUTLERY	$1,118	0.3 tons	RECOMMENDED