

# Project Overview

**P3 Intern:** Andrew Hansen

**Major:** Civil Engineering

**School:** University of Nebraska – Lincoln

# Smithfield®

*Good food. Responsibly.®*

## Company Background

Smithfield Foods was founded in 1936 in Smithfield, Virginia. Since then, it has grown to be the largest pork processor and hog producer in the world, grossing \$15 billion in company sales for 2018. Their facility in Lincoln, Nebraska was originally constructed in 1910, but only recently acquired by Smithfield in 2006. This location employs approximately 500 employees and produces mainly hams, ribs, hocks, and bacon. The following report will focus on the Smithfield facility located in Lincoln, Nebraska and Assessment Recommendations (ARs) that will directly benefit this particular facility.



## Project Description

In the summer of 2019, Partners in Pollution Prevention (P3) intern Andrew Hansen was assigned to observe material and resource waste, develop alternative options to improve plant sustainability, and present these recommendations in the following document. Plant Engineer Nick Nelson was the intern's primary contact, but much additional consulting was done with the individuals listed in Appendix A. The intern worked full time on this project for 11 weeks during the summer of 2019.

## Pollution Prevention Benefits

Following the intern's assessment, several Pollution Prevention (P2) opportunities have been identified in the facility. These opportunities include upgrading facility lighting, implementing a closed loop water chilling system, adding machine guards, installing a heat recovery system, and installing a reverse osmosis system. Once the following ARs have been implemented, Smithfield can expect to see reductions in electric, water, and gas utilities, less wasted pickle, and overall energy savings as outlined in Table 1.1.

**Table 1.1:** Summary of Assessment Recommendations

Project	Tangible Benefits (Annual)	Payback Period (years)	Annual Monetary Savings
Liquid Level Sensor Guards	<ul style="list-style-type: none"><li>1,500 gallons of waste pickle source reduced</li></ul>	0.81	\$6,100
Facility Lighting Upgrades	<ul style="list-style-type: none"><li>255,000 kWh electricity usage reduced</li><li>353 kW electricity demand reduced</li></ul>	2.5	\$12,300
Closed Loop Water Chilling System	<ul style="list-style-type: none"><li>4,780,000 gallons of water source reduced</li></ul>	7.2	\$8,300
Smokehouse Heat Recovery System	<ul style="list-style-type: none"><li>260,000 gallons of water source reduced</li><li>324,760,000 BTU of natural gas reduced</li></ul>	7.9	\$1,700
Reverse Osmosis System	<ul style="list-style-type: none"><li>357,000 gallons of water source reduced</li><li>463,589,000 BTU of natural gas reduced</li></ul>	10	\$2,500
<b>Total Potential Savings</b>			<b>\$30,900</b>