

# Illinois Food Manufacturer

## E3 Success Story

In March of 2018, an assessment was completed at an Illinois food canning facility. The focus of the assessment was [Economy, Energy, and Environment](#). The food manufacturing company has a strong commitment to sustainability.



The parent company operates six manufacturing facilities and also has a separate headquarters facility. It produces a variety of products around the U.S. and services all channels of distribution. Its labels include both company branded and private labels with a wide variety of recipes. The Illinois manufacturing facility's footprint is over 300,000 square feet and operates on a 24/4 schedule.

### SITUATION

The food manufacturer welcomed the opportunity to explore improvements in its processes through the E3 program. The company has a drive towards continuous improvement to support its goals to provide the highest quality products. The E3 assessment looked at the value stream from raw ingredient receiving through processing, canning, and labeling.

### THE E3 PROCESS

The E3 program, developed in part by the U.S. Environmental Protection Agency and the U.S. Department of Energy, is designed to improve production and profitability while reducing energy usage and environmental impact. The E3 review involves a hands-on assessment of production processes, recommendations for improvement, and assistance with implementation.

Three Illinois organizations teamed up to provide this assistance to the food manufacturer. The [Illinois Manufacturing Excellence Center](#) (IMEC) provided economic and process efficiency advice. The [Energy Resources Group](#) (ERG) focused on energy improvements. The [Illinois Sustainable Technology Center](#) (ISTC) focused on environmental performance and improvements.

The food manufacturer committed to the E3 process through the engagement and efforts of plant management and facility management personnel. Various employees from a range of departments also provided supporting documentation and information.



### KEY STATISTICS

	1,226,540 dollars savings identified
	7,248,899 kilowatt hours reductions identified
	577,562 therms reductions identified
	41,966.200 gallons water/waste-water conservation identified
	10,193 metric tons CO <sub>2</sub> equivalent avoidance potential

### ABOUT THE COMPANY

Location: Illinois

# of employees: 150-200

Produces: Canned goods

NAICS code: 311421

### NUMBER OF E3 RECOMMENDATIONS MADE

ENERGY	29
ECONOMY	4
ENVIRONMENT	15

This E3 Success Story is part of a series of case studies, produced by ISTC, exploring environmental and business improvements which are repeatable at other facilities and organizations.

Please contact ISTC for more information at [istc-info@illinois.edu](mailto:istc-info@illinois.edu)

### E3 RECOMMENDATIONS

Here is a partial list of best management practices identified at the facility.

#### ENERGY

- Combined heat and power
- Renewable energy - renewable natural gas and solar PV
- Controls and commissioning
- Lighting upgrades to LED
- Variable frequency drives on process motors
- Compressed air system efficiencies
- Steam distribution efficiencies

#### ENVIRONMENT

- Utilize OSHA-compliant safety air guns
- Implement Global Harmonized System
- Investigate aqueous ozone for sanitation
- Repair process water leaks
- Rainwater capture
- Install low flow devices in restrooms
- Conduct water assessment
- Divert waste from land fill - recover recyclable materials

### ABOUT THE E3 PROJECT

This E3 Project was funded by the U.S. Environmental Protection Agency as part of the Illinois Conservation of Resources - Economy, Energy and Environment (ICORE3). This assessment was provided at no cost to the manufacturer.

Find out more at: [www.epa.gov/e3](http://www.epa.gov/e3)

### ECONOMY

After careful observation and conversations with various employees, four continuous improvement opportunities were identified. Recommendations encourage the company to establish a Total Productive Maintenance (TPM) program, a Training Within Industry (TWI) program, and a Kan Ban/Visual Inventory Control in the finished goods warehouse. These programs have the potential to improve efficiency and lower costs. An additional opportunity lies in improving setup reduction / quick changeover times for several of the processing and labeling lines. This improvement has the potential to reduce downtime and changeover time thereby lowering costs.

### ENERGY

Twenty-nine different energy opportunities were identified. The recommendations were extensive and could save the company anywhere from \$1,000 to over \$360,000 annually, depending on the project.

Significant financial and energy savings were identified through 3 of the recommendations. These include the implementation of combined heat and power (CHP), use of an existing anaerobic digester (AD), and installation of a solar photovoltaic (PV) array.

With analysis provided by the US Department of Energy Midwest CHP Technical Assistance Partnership, the food manufacturer could reduce purchased electricity by 95%, while increasing natural gas usage by 13% with the installation of a CHP system. The net savings in energy costs is \$171,000, with a simple payback of 3.2 years including federal tax credit and local utility incentives.

The food manufacturer has an existing non-functioning AD that had previously been decommissioned. An opportunity exists to recommission the equipment to divert existing organic waste streams to the AD to process the material into renewable natural gas. Through this diversion, the facility can avoid landfill and waste water treatment costs of \$309,000 per year while generating salable energy estimated at \$560,000 per year.

Renewable solar PV electricity generation is a recommendation that would ultimately save the food manufacturing plant both in energy costs and kWh. It has the added benefit of being a visible reminder to the community that the company cares about their carbon footprint. Annual savings for 2 MW solar installation is \$213,000 and 2,557,000 kWh.

The manufacturer is motivated to improve and has fixed identified air leaks, comprising over \$15,000 and 168,000 kWhs annually. Other opportunities are being investigated by the site's management team and corporate office.

### ENVIRONMENT

The E3 team assessed the use of resources to identify opportunities for improvements that would result in not only cost savings but also in resource conservation and improved health and safety of their employees. Fifteen recommendations were presented. Focus areas include environmental compliance, health and safety, water conservation, hazardous materials management, solid waste management and general house keeping.

The recommendations with the most water and costs saving involve the reuse of non-contact cooling water and the capture of rainwater. These have a combined potential savings of 34M gallons in well water and potable tap water. While there would be capital investment costs, the annual savings from each of these recommendations is \$22,700 and \$7,100 respectively.