

Project Overview

Industrial Placement Intern: Ryan Stigge

Major: Mechanical Engineering

School: University of Nebraska-Lincoln

Company Background

Lincoln Wastewater System is responsible for the treatment of residential and industrial wastewater and handling solid waste for the City of Lincoln. Lincoln Wastewater System is committed to ensuring the highest possible levels of public health, economic growth, environmental quality and fiscal responsibility. They are actively pursuing opportunities to reduce their environmental impact while still meeting State and Federal regulations.



Project Description

A large part of this project involved performing a plant energy audit which could be used to compare Lincoln Wastewater System's energy usage to an industry average and identify areas for energy efficiency improvements. Pollution Prevention opportunities were looked at for the Biological Treatment and Headworks Pumping processes along with energy associated with lighting and buildings.

Benefits and Results

Implementing pollution prevention opportunities at Lincoln Wastewater System has the direct benefits of significantly reducing energy consumption and related costs. With these direct benefits also come intangible benefits of reducing greenhouse gas emissions and providing a great marketing tool to improve the public image of Lincoln Wastewater System. Table 1 below shows the potential savings related to opportunity implementation.

Table 1: Summary of Potential Benefits

Focus Area	Annual Energy Savings (kWh/yr)	Annual Cost Savings	Annual Greenhouse Gas Reduction (CO2 Equivalents)
Biological Treatment	664,000	\$36,600	630 Metric Tons
Headworks Pumping	481,500	\$26,770	463 Metric Tons
Lighting	171,000	\$9,400	160 Metric Tons
Total	1,316,500	\$72,770	1,253 Metric Tons

Additional benefits could be realized should the Wastewater System elect to undertake projects to recover energy from effluent water and engine exhaust, resulting in potential generation of 30,900 therms of energy worth \$26,000.