Project Overview

NIAC Intern: Adam Nebelsick
Major: Mechanical Engineering
School: University of Nebraska-Lincoln

Background
As an employee of the Nebraska Industrial Assessment Center (NIAC) during the summer of 2022, I participated in four assessments as seen below.

Industrial Assessments:

- Vishay, Columbus, NE
- Wastewater Treatment Plant, Norfolk, NE
- Becton Dickinson, Holdrege, NE
- Nebraska Nitrogen, Geneva, NE

Project Description
The purpose of these assessments was to use my knowledge of engineering to prepare these recommendations:

- Implement a compressed air management plan
- Upgrade facility lighting
- Install a VFD on a sludge holding tank blower
- Install cogged v-belts on air handling units

Pollution Prevention Benefits
The potential benefits of the recommendations over the summer are summarized below.

Table 1: Summary of Pollution Prevention Opportunities

Recommendation	Annual Cost Savings	Implementation Cost	Payback Period	Annual Energy Savings	GHG Reduction ($MTCO_2e/yr$)
Implement a Compressed Air Management Plan	$25,300	$17,000	0.7 years	550,091 kWh	525
Upgrade Facility Lighting	$1,620	$5,690	3.5 years	10,200 kWh	7.2
Install a VFD on Sludge Holding Tank Blower	$5,827	$4,500	0.8 years	85,848 kWh	60.9
Install Cogged V-Belts on Air Handling Units	$1069	$1041	1.0 years	22,824 kWh	16
Total	**$33,816**	**$28,231**	**1.5 years**	**668,963 kWh**	**609**