

Project Overview

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Project Background & Description

The Nebraska Department of Environmental Quality (NDEQ) is a governmental agency that is devoted to the protection of the quality of Nebraska's air, land, and water resources. The NDEQ enforces regulations and provides assistance to comply with these regulations. For years, the NDEQ has been interested in energy conservation in public utilities. This project involved detailed energy assessments for wastewater treatment facilities in Aurora and Louisville, NE.

Pollution Prevention Benefits and Results

Using less energy not only saves money but cuts down on greenhouse gas emissions related to the generation of electricity. Implementing the recommendations resulting from this project (highlights are summarized in Table 1 below) could result in the potential reduction of greenhouse gas emissions by approximately 1,400 metric tons of carbon dioxide equivalents per year.

Table 1: Potential Pollution Prevention Benefits and Results

Recommendation	% Savings of Total Facility Energy Cost
Plan for future (immediate and long-term) efficiency and flows.	3% ¹
Get energy efficient lighting fixtures	1%
Control wastewater aeration according to oxygen and mixing requirements. May control speed/frequency by VFDs, ASDs, or SCADA, or throttling.	18-22% ²
Control digester aeration using oxygen requirements. May control speed/frequency by VFDs, ASDs, or SCADA, or throttling.	19-35%
Lagoon equalization/pre-treatment	5-23% ³
Operate facility under Time-of-Use rates, no operation during peak hours	21%
Total	46-84%
Realistic Total	23-42% ⁴

Additional indirect benefits include maximizing equipment efficiency and flow capacity, and opening up communication between the NDEQ, other wastewater treatment facilities, and electricity providers.

¹ According to the Louisville sludge pump example

² According to rough calculations and estimates from Aurora and Louisville data

³ Assuming the lagoon treatment relieves 10-40% of the aeration requirement from the oxidation ditch in Aurora.

⁴ Assuming that predictions are 50% too high. This is comparable to Joseph Cantwell's energy efficiency study.