



Kasson Wastewater Plant Upgrades— Case Study

Upgrades at the Kasson plant could save up to \$17,000 a year in electric costs

From mid-November through December 2015, MnTAP analyzed the electrical conservation potential of the Kasson Wastewater Treatment Plant and identified three opportunities to reduce operating costs.

Recommendations include:

- Dissolved oxygen control could save \$13,000/year and 147,000 kWh
- Biosolids aeration control could save \$4,200/year and 52,000 kWh
- UV disinfection flow pacing could save \$750/year and 4,000 kWh



The Kasson, Minn., wastewater plant is planning upgrades to accept wastewater from the neighboring city of Mantorville. MnTAP was enlisted to estimate the electrical conservation potential and identified three opportunities to reduce operating costs.

Electricity Conservation Opportunities

Dissolved Oxygen Control for the Oxidation Ditches

Kasson uses two secondary aeration oxidation ditches to break down organics. The oxidation ditches currently run near the minimum speed allowed by SCADA programming and are manually adjusted. The current electrical cost for secondary aeration is \$36,300 per year. Current programming does not allow operation across the full design range of the system. Resolving current program issues and adding dissolved oxygen measurement to control aeration speed is estimated at \$55,000 and will save \$13,000 a year, with a payback of about 4.2 years.

Biosolids Aeration Tank Pressure Control

Biosolids storage is aerated to maintain solids suspension and to prevent solids from going septic. A constant 724 cfm of air from a 50hp blower are added for this purpose at \$24,500 per year. Because the height of sludge varies from 11 to 19 feet during accumulation and decant procedures, air input can be varied with height and still meet the 10 State Standards for sludge aeration. Controlling a blower motor VFD on biosolids tank pressure could allow a 15% reduction in power use and a \$4,200 annual reduction in electrical operating expense.

UV Disinfection

The UV disinfection system is designed for adequate disinfection at full design capacity. Since the plant is not yet running at design capacity, the system is over-disinfecting and consuming more electricity than needed. The Trojan UV3000B disinfection system has flow pacing capabilities that are not utilized. A flow input signal would be needed to activate the flow pacin which would shut down one of the two UV light banks when flow falls below 50% of design. MnTAP estimates the plant would operate at less than 50% flow for 570 hours per year and flow pacing would save \$750 per year.

