

Preliminary Audit Report

FACILITY NAME: UNION WATER TREATMENT PLANT

MUNICIPAL NAME: UNION WATER SUPPLY SYSTEM

DATE: JUN 2014

Confidential & Proprietary

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Facility Overview

Municipality Name: Union Water Supply System

Facility Name: Ruthven Treatment Plant & Cottam Booster Station

Item	Information
Facility Type	Water Treatment Facilities
Year Built	1960's
Hours of Use	24/7
Address	Ruthven
Site Contact	Rodney Bouchard
Phone Number	519-326-1668

Recommended Energy Efficiency Measures

This section presents a high-level identification of potential energy saving measures that warrant investigation based on the site visit, discussions with building personnel and available incentives.

Opportunity	Description	Expected Savings ¹	Estimated Cost Range ²	Incentive Available	Typical Payback (years) ³
VFD	Install VFD to 75hp Backwash pump #1	100237 kWhrs \$14033/ yr total	\$7500	\$3980	0.75 yr
VFD	Install VFD to 150hp Highlift Pump #6	300695 kWhrs \$42097/yr	\$15000	\$7960 est	0.6 yr
VFD	Install VFD to 60hp Booster Pump #1	160360 kWhrs \$22450 / yr	\$6000	\$3220	0.6 yr
TOTAL		\$78580	\$28500	\$15160	1yr

Notes

Noted savings and cost estimates are for reference only and are not guaranteed. Factors such as location of the municipality and scale of the opportunity may impact these figures.

The following assumptions were made in the calculations; Electricity is at a cost \$0.14/ kWhr. Run hours for Backwash Pump#1 is 2000 hrs/ year, Highlift Pump #6 is 3000 hrs/year, Booster Pump is 4000 hrs/year.

Calculations would need to be adjusted once true operating run times are validated.

1. Some savings are interrelated. Each savings value presented in this table represents the savings for each individual opportunity. Interrelation refers to combining opportunities, which may have a positive or negative financial impact on each respective opportunity. This impact must be evaluated separately prior to implementation to ensure accurate financial projections
2. This report only includes measures that have a simple payback of 8 years or less, unless municipal staff have specified otherwise.



Upgrade recommendations

Variable Frequency Drives (VFD's)

VFD's are units that are attached to electric motor systems that help to control and regulate the speed of the motor so to match the requirements of the pumping or compressor operations. Currently motors are constantly running at full speed because there is no control mechanism in place to regulate the speed of the motors to match the operating conditions.

The VFD reduces the motor speed electronically. A general rule of thumb for VFD operation is 50% in power savings is achieved for every 15% in reduction in speed. Care should be taken when deciding where to install this technology as motors should be inverter duty rated to prevent premature burn out of the motor.

VFD Applications

Pumps

Currently there are a number of pumps throughout the Union System that pump raw product for treatment processing. Subsequently there are no VFD's applied to any of these motors at the time of the audit. As these motors are running as the demand requires then the opportunity for energy savings is large for these motors can be significant in size and operations.

Currently the plant management are looking to install new motors and VFDs throughout the facilities so to reduce the operating costs and also benefit from reduced maintenance requirements. Also a plan should be put in place to apply VFD's to the larger motors that have longer run times first.

VFD's should be installed on all motors to obtain the optimum efficiency and control of operations.

Conclusion

The Union Water Supply System can obtain significant reduction consumption charges, and demand charges improvements in Power factor (PF) by implementing the recommendations in the report. Taking action now will prepare for the time when Time of Use (TOU) rate structures are implemented while reducing costs by improving process and human resource efficiencies.

Next Steps

This is only a preliminary report based on the conclusions that were determined after the audit was completed of action items that the Management are looking to implement immediately.

Once more complete data is obtained and compiled then a more comprehensive multiyear report will be submitted that will be used as a basis for future improvements that the Union System are looking to undertake. Regular audit updates and review of progress is recommended on a reasonable schedule.

Once you have had a chance to review this document, please contact LAS to discuss which measures you wish to pursue and how we can help.

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