The Village of Albion Water Treatment Plant is Washing Away Carbon

Case Study

FlexTech Consultant:
LaBella Associates

Location:
Rochester, NY

Sector:
Government

Annual Maintenance Cost Savings:
$2,100

Annual Carbon Emission Reduction
131,367 lbs.

The Bottom Line

The Village of Albion Water Treatment Plant (WTP), located in Waterport, New York is the primary source of water, including drinking water, in Orleans County. WTP's existing boilers are nearing the end of their useful life and currently require supplementary maintenance to sustain their operation. Because of the limited availability of natural gas and the high cost and emissions of #2 oil, the facility was interested in evaluating the feasibility of alternate-fuel boilers.

WTP enlisted the services of LaBella Associates to evaluate the existing hot water system and provide recommendations for replacement options that are economical as well as environmentally friendly. Headquartered in Rochester, NY, LaBella offers building efficiency, energy, infrastructure, and environmental services.

"The best part or benefit of our experience was the ease and timely manner in which everything was performed. The study was relatively painless on our end and the end result was very professional. I am very impressed with how thorough yet easy to understand the information was. Choose LaBella for a quality product."

– Adam Rush, Chief Operator, Village of Albion Water Treatment Plant

Approach

LaBella conducted a study to evaluate the feasibility of installing biomass boilers and their associated economic impact and carbon emissions reduction. Additionally, biomass boilers were compared to equivalent oil-burn boilers to replace the existing boilers.

The scope of this study encompassed evaluation of the feasibility of new boilers, commercial evaluation of wood pellet sources, thermal storage, pellet storage and conveyance, and associated construction costs. Proposed boiler placement options and system schematics were included as well.

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Anticipated total carbon footprint reduction of 131,367 lbs. per year and 1,847 metric tons over the course of a 30-year period.

Comparing Results

Based on a boiler analysis, installing a biomass boiler and a #2 oil boiler will present the greatest opportunity for carbon savings. Due to the location of the facility relative to the bulk wood pellet suppliers, the pricing of wood pellet fuel, with transportation costs added, is higher than that of oil required for an oil boiler. Taking this into consideration, oil boilers present the most favorable replacement option, despite having an increased carbon impact.

Although oil boiler replacements are a more economically favorable option, the biomass boiler presents the greatest opportunity for carbon reduction and fuel diversity. Commercial evaluations of the available systems and fuel sources are included with this study as well as all associated pricing estimates.

In implementing a pellet boiler solution, it is anticipated that the facility's total carbon footprint will be reduced by 131,367 lbs. per year and 1,847 metric tons over the course of a 30-year period. Although the biomass boilers do not present significant energy savings, the proposed biomass boiler is estimated to save $1,461 in operating costs per year.

Steps for the Future

Because WTP's existing boilers are aged and prone to frequent failure, maintenance repair costs have significantly increased. Replacing these boilers would reduce maintenance costs and provide the facility with a more reliable heating system. A biomass setup would also provide WTP with a duel fuel system (Wood Pellet and #2 Oil) that has lower carbon emissions than two conventional oil boilers.

The New York State Energy Research and Development Authority (NYSERDA) offers incentives for biomass boilers that meet the requirements of the Renewable Heat NY Program. Should the Village of Albion move forward, these incentives would reduce initial implementation costs for installation.

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