Sheboygan Wastewater Treatment Facility Changes Operating Strategy

The City of Sheboygan Wastewater Treatment Facility (WWTF) has been a leader nationwide in the development of co-digestion and associated energy production. It was one of the first facilities in North America to achieve net zero energy status, meaning it was often able to produce more electricity through its micro-turbine system than required to operate the treatment plant. More area treatment plants have followed Sheboygan's lead and added the ability to accept and co-digest high strength wastes (HSW). This has increased competition for the higher quality wastes coming from the dairy industry and lowered tipping fees that treatment plants receive for accepting HSW. In 2011 Sheboygan was receiving over $300,000 per year for accepting HSW tipping fees and in 2016 has seen HSW tipping fees drop to only $50,000 per year.

Sheboygan has accepted high strength waste (HSW) for years in order to co-digest with the plant's sludge to increase digester gas production. The use of the increased volume of digester gas, primarily to make electricity, resulted in significant cost savings and occasional production of electricity in excess of the treatment plant's electricity demand. The combination of aging equipment, reduced tipping fees for the HSW, and digester capacity limitations resulted in questions regarding the cost-effectiveness of continuing to accept HSW.

The City of Sheboygan and the WWTF were fortunate to have existing available infrastructure that was easily repurposed for co-digestion and received over $1 million in micro-turbine equipment to start-up. This allowed the City to receive the benefit of lower energy costs, but for the City to continue with the program significant capital improvements costing approximately $2 million were needed immediately and an additional $3.5 million in upgrades would be needed in the next several years.

The city contracted a consultant to evaluate the overall cost effectiveness of continuing the current co-digestion HSW program. The WWTF has several capital improvements projects on the horizon along with the HSW program requirements. In order to determine the priority of capital improvements at the WWTF this evaluation was necessary to determine the future continuance of the program.

The proposed capital upgrades are to rehabilitate the HSW receiving equipment $1,814,000, conversion of a secondary digester to a fourth primary digester $1,548,000, replace the 30 kW turbines in five years $1,000,000 and replace the 200 kW turbine in 10 years $1,000,000.

Given other critical capital improvement needs of the city, including the renovation of City Hall, street resurfacing projects and electrical switch gear replacement at the WWTF, it is the department's recommendation to suspend the program for now, and consider refining the program when financing terms become more favorable. This recommendation was recently approved by the City Council. The WWTF will continue to

maximize energy savings with the remaining methane gas production and look at alternatives to reduce energy consumption.