



THE QUEST FOR NET ZERO

Jake Gardner | Energy Efficiency Circuit Rider

In most cases wastewater treatment is the costliest electric utility expenditure for a municipality. For as long as your municipality has been treating wastewater, the governing body has either complained about or grown to accept the large monthly bill. But as technologies grow more efficient and older plants are redesigned, these high electric fees could be reduced or even eliminated.

Net-Zero energy consumption, when talking about wastewater treatment, refers to the treatment system generating as much energy as it uses. This is a difficult goal to achieve, but in some cases, it can be achieved. I recently had the pleasure of doing energy assessments for two systems that were both very close to achieving a net zero energy balance.

The first was a treatment facility designed in the 1950's. The facility had not been upgraded with more efficient equipment; to be honest, there wasn't much energy using equipment at all. The designers of the facility had cleverly utilized gravity to do almost all of the facilities work for them. This wastewater system was entirely contained to a hillside without any reversals in slope direction and the treatment facility was at a lower elevation than the collection system. Although this is not something that can be duplicated without perfect conditions, it did make me think about how gravity can be used to a system's advantage.

The second was a wastewater treatment facility that utilized solar arrays to create electricity. Although the facility used a large amount of electricity it was able to produce enough electricity to actually make a small amount of money each month by selling their excess electric production to their supplier. This is a much more realistic approach to net-zero energy consumption for many wastewater treatment facilities, but it does not come without its costs. Initial installation costs can be financially taxing and the arrays do require a certain amount of space and sun exposure to produce sufficient electricity.

There is a third technique for achieving net zero energy consumption that in my time with NYRWA I have not yet seen: producing energy from the waste itself. This includes the process of harvesting biogases and either selling them or using them to power some functions of the facility. Biogas is produced through anaerobic digestion and can be used as an energy source for electricity, heating, or transportation fuel.

While the end goal may be the same from facility to facility, each treatment facility is different. They each have their own

unique challenges in treating water, therefore the way each system approaches the goal of net-zero energy consumption will also need to be unique. Some of these solutions may be technical while other may be organizational.

Net-zero treatment is a lofty goal, but one worth championing. It will require strong leadership, detailed planning, and a dedication to the course of action. While net zero energy consumption may remain just a goal, there are a number of best practices that can lead to large reductions in electric usage. NYRWA is able to provide free and confidential energy assessments. The assessments are a great tool for learning about these practices and ways to save your system money. An assessment can be scheduled by emailing me at gardner@nyruralwater.org. 💧💧💧