

DON'T PUMP WITH YOUR PEDAL TO THE METAL

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According to the EPA, the highest energy users for most municipalities are their water and wastewater systems. Behind aerators, pumps are the second largest consumers of electricity in treatment systems. Taking a few minutes to check on the condition and application of your system's pumps could lead to significant savings for your system.

The amount of electricity that a pump uses is driven by several factors: efficiency of the pump, duration of use, flow control methods, and motor condition/selection. Improper utilization in any of those four categories can lead to inefficient pumping and deficiencies in more than one category can compound the problems.

Often, one of the largest inefficiencies in a pumping system are the methods used to control flow. Throttling a valve to limit flow rate increases pumping head and leads to recirculation. The use of a valve to throttle flow uses a lot of electricity to perform a limited amount of useful work.

You can think of this like driving your car with the gas pedal pushed to the floor while you use your brake to control speed. You may be able to keep your car from accelerating to its top speed, but you will be using gas at the same rate as if you were at top speed. Your engine would be constantly redlined and your brakes would wear through much faster than if you were to drive as you normally do.

This method of flow throttling will have a similar effect on your pumping system. The pump is forced to work harder to perform less work. This is not only energy inefficient, but can lead to costly repairs and a decreased lifespan of your pump.

There may be points in your system that use valves to throttle flow due to gravity, but throttling a pump's flow with a valve is very wasteful both in terms of energy and money spent. Instances where this form of throttling occur are prime candidates to benefit from the installation of a variable frequency drive. Installing a VFD will throttle the pump itself.

By controlling the electricity provided to the pump, a VFD will allow you to choose the flow that you desire for your system. This will lead to less wear on your equipment and lower consumption of electricity while performing the same work.

The EPA has also identified several other signs that your pumping system may be operating inefficiently. Noticing any of the following in your system may signal that its time to rethink how your system is operating.

- Bypass line flow control
- Frequent on/off cycling

- Cavitation noise at the pump
- A hot running motor
- And inability to produce maximum design flow

Throughout the United States, water and wastewater treatment systems annually consume approximately 75 billion kilowatt hours of electricity at a cost of roughly 7.5 billion dollars. If systems across the country were able to achieve just a 10% decrease in electricity usage, it would result in savings close to \$750 million annually.

But, how do you realize your portion of these savings for your system and municipality? Quite often, the solutions are relatively simple and we'd like to help. Our free and confidential energy assessments are a service we provide to our municipal member systems that aim to find ways to improve system efficiency.

If you are interested in learning more about efficient pumping systems, please contact our Energy Efficiency Circuit Rider, Jake Gardner at gardner@nyruralwater.org 💧💧💧