Energy & Water Interdependence

Water and energy are two of our most crucial resources, and with environmental issues taking center stage in the current administration, both utility managers and regulators are making efforts to sustain future supplies.

Almost all industries rely on water for their operations. By reducing water use, industries can not only protect the environment but also gain a competitive edge by reducing their own cost of doing business. As a result, industries have increased their water awareness efforts over the last few years. For example, many have set up water conservation programs, surveyed their operations, identified where water is wasted and can be reused, and implemented overall operational efficiency improvements to reduce water usage.

Even in comparison to agriculture, energy continues to be the most water-intensive industry. Experts estimate that it requires about 800 gal of water to generate one megawatt-hour of electricity. To combat the amount of water consumed by traditional power plants, utilities are increasingly turning to alternative technologies.

Water, however, is not the only critical resource. In fact, water and energy are tightly intertwined. Just as the production of energy uses up tremendous amounts of water, the collection, treatment and distribution of water and wastewater are huge energy hogs.

According to the U.S. Environmental Protection Agency, drinking water and wastewater services annually account for approximately 3% of national energy consumption, $4 billion in energy costs and $5 million tons of greenhouse gas emissions.

Fluctuating energy costs and increasing energy use from advanced water treatment processes have put a lot of pressure not only on already tight operating budgets, but also on customers’ pocketbooks. As a result, water and wastewater utilities are beginning to implement comprehensive strategies to reduce their energy use, and some are looking to generate the majority of their electrical needs through renewable biogas, energy generated on site and solar power.

For example, this spring the Milwaukee Metropolitan Sewerage District (MMSD) in Wisconsin and Veolia Environmental Services unveiled a joint proposal to construct a low-pressure, “green” pipeline that will save MMSD customers more than $100 million over two decades by transporting landfill gas from Veolia’s Emerald Park Landfill in Muskego to fuel the Jones Island Water Reclamation Facility. This would be one of the largest green energy projects in the state, estimated at $80 million, and is expected to save homeowners and businesses in MMSD’s four-county service area an estimated $148 million over 20 years while providing an alternative, environmentally beneficial power source for Jones Island.

As the water and wastewater industry continues to study the water-energy relationship, we will continue to see increased commitments by water agencies to reduce energy consumption and look for alternative means to supplement their energy needs. I am positive that in the long term, the interdependence between energy and water will not only result in improved water efficiency and related infrastructure, but also create various profit opportunities for the water and wastewater industry.