Analysis of Electrical Energy Use At a Municipal Wastewater Treatment Plant

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The cost of electricity, a major operating cost of municipal wastewater treatment plants, is related to influent flow rate, wastewater characteristics, power price, and power load. Several of these factors are beyond the control of utilities. However, with knowledge of inflow and price patterns, plant operators can manage the controllable factors and processes to reduce electricity costs. Diurnal and seasonal trends of power load are analyzed for Blue Plains Advanced Wastewater Treatment Plant. Power usage is broken down among treatment processes. A simulation model of power load is developed with a focus on influent pumping. The uncertainties are illustrated with examples.