WATERLOO | ENGINEERING

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Optimal Pathway for Energy Recovery in Municipal WWTPs

Wastewater treatment plants are energy intensive consumers in any municipality. In Ontario, they account for more that one third of the total municipal energy consumption. However, a paradigm shift towards wastewater is recently taking place; where it is being regarded as a valuable energy resource rather than a burden. The purpose of this research is to develop a model that maps all the available technologies that recover energy from the organic constituents of wastewater influents. From this network of alternatives, the optimal pathway that maximizes energy recovery at lowest cost and environmental impact will be synthesized. A novel mixed integer linear program model is developed to solve this problem and a case study will be used for validation.

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