

NEWEA Position Paper

Renewable Energy Generation from Wastewater

Ratified January 22, 2012 by the New England Water Environment Association



The use of energy by the world population is expected to increase dramatically in the coming decades. The world's current dependence on fossil fuel derived energy is not sustainable in the long term. This fossil fuel dependence is a contributor to geopolitical tensions and conflicts in the present with those tensions expected to worsen as the readily available amount of fossil fuels decline. The use of fossil fuels is widely accepted as a contributor to global climate change, which is expected to add yet another series of challenges to the global population in the coming decades.

The wastewater treatment industry is an essential part of the infrastructure in New England and in the developed world as a whole. The wastewater industry provides the essential services of protecting human health and sanitation as well as ensuring a clean and safe environment. In order to provide the essential service of treating wastewater, the wastewater treatment industry uses a large amount of energy. The majority of this energy in New England states is fossil fuel derived. In many New England communities, the wastewater conveyance and treatment facilities are the single largest users of power. In addition to contributing to the global challenges briefly described above, this places a significant and growing financial burden on each community.

With the advent of ever advancing regulatory/nutrient control, energy demands at treatment plants continue to rise. It is NEWEA's position that the current energy use and growing energy needs in the wastewater treatment industry are simply not sustainable.

NEWEA supports the advancement of biosolids re-use, digestion and alternate energy development at wastewater treatment facilities

NEWEA agrees with and supports the Water Environment Federation Position Statement—*Renewable Energy Generation from Wastewater*. NEWEA feels the ideas outlined in the statement should be pursued and developed to the extent possible as a means to reduce the energy consumption in the wastewater treatment industry.

NEWEA believes that energy derived from wastewater treatment is a renewable energy resource. Energy generated from water resource recovery processes can include:

- Electrical energy, heat, or biofuels from utilization of digester gas (biogas that consists mainly of methane (natural gas) and carbon dioxide)
- Electrical energy and heat from thermal conversion of biomass (biosolids)



Photo courtesy of Dr. Rawhead: <http://flic.kr/p/7EHKh5>

- Electrical energy from biosolids products used by other entities (e.g., pellets used in power plants, cement kilns, or industrial furnaces)
- Heating or cooling energy using plant influent or effluent as heat source or sink for a heat pump

In addition, NEWEA supports research and development of emerging technologies in energy and nutrient recovery. Technologies such as gasification of biomass (biosolids), microbial fuel cells and algae growth and harvest may offer additional means for future energy recovery at many wastewater treatment facilities.

NEWEA would support an initiative to have each member facility adopt an energy usage policy and

suggests the stated goal as the achievement of net zero energy usage. Each facility will investigate available and potential technologies and operational strategies' to reduce energy consumption and maximize energy production.

NEWEA supports the WEF belief that wastewater treatment plants are not waste disposal facilities, but rather water resource recovery facilities that produce clean water, recover nutrients (such as phosphorus and nitrogen), and have the potential to reduce the nation's dependence upon fossil fuel through the production and use of renewable energy. In addition, NEWEA also believes the wastewater treatment plants represent the opportunity for community resource and energy recovery facilities to include other materials such as agricultural materials, source separated

organics and other organics that might be a potential biofuel for some technologies.

NEWEA supports the current effort by the Massachusetts DEP (MassDEP) Bureau of Waste Prevention to develop new regulations regarding the management source separated organics (SSO). If promulgated, NEWEA feels these regulations will be a stimulus to the development of co-processing waste to energy facilities at wastewater treatment plants. NEWEA also supports the MassDEP and Massachusetts Department of Energy Resources (DOER) Clean Energy Results program, specifically the program's goals of increasing renewable energy onsite at water and wastewater facilities and promoting zero net energy operations in this sector.

NEWEA is encouraged by recent developments in New England. Examples include co-digestion projects for agricultural materials with source separated organic materials. Other

examples include two new biosolids digesters at wastewater treatment facilities and several examples of renewing and improving existing wastewater treatment facility digesters. Several states have developed aggressive renewable energy policies and regulations which specifically incentivize use of biogas as a power source. Increasingly, other zero-emission renewable sources are being placed at wastewater facilities. Lastly, a gradual, but measurable evaluation of biosolids as a resource is being made throughout the northeast.

In conclusion, NEWEA supports the advancement of biosolids re-use, digestion and alternate energy development at wastewater treatment facilities. With development of this alternate energy source, a significant impact to energy use in the New England treatment industry can be made.