

PWEA Position Statement

Renewable Energy Generation from Wastewater

Adopted by PWEA on October 8, 2015



PWEA Mission Statement

Enhance the knowledge and abilities of Pennsylvania's water quality professionals, promote sound sustainable water policies, and promote public awareness of the need to protect water resources.

PWEA shares the ideals promoted by WEF, EPA, and many national organizations, 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 use and production of renewable energy.

Regional water resource recovery facilities serving a large defined population base improve the opportunity for resource recovery, renewable energy generation and energy conservation. The source of the resources to be recovered at a water resource recovery facility is self-generating and relatively constant, and therefore renewable. Human and organic waste (e.g. sewage, septage, food waste, restaurant grease) from the renewable resource, with biogenic carbon, have the opportunity to be converted to energy. Thermal recovery from the resource carrier water can be used to supplement the local space heating and cooling demands. Therefore, PWEA believes the resources to be recovered in the population-derived waste are renewable.

Consistent recognition of the energy derived at treatment plants as a renewable energy source, and support of renewable energy programs at treatment plants, will stimulate production of energy from water resource recovery activities, create more clean energy jobs, and help reduce greenhouse gas emissions by reducing electricity demand from fossil fuel-based power plants.

Pennsylvania has a great diversity of sizes and types of water resource recovery plants. While the amount and type of renewable energy available is generally determined by the plant size and type, PWEA believes that every plant has the opportunity to contribute to the generation of renewable energy, which can include the following:

- Electrical energy, heat, or biofuels from utilization of anaerobic digester gas
- Electrical energy and heat from thermal conversion of biosolids
- Electrical energy from biosolids products used in energy production (e.g., pellets used in power plants, cement kilns, or industrial furnaces)
- Heating or cooling energy using the thermal energy found in plant influent or effluent as heat source or sink for a heat pump

In addition to the potential energy contained within the wastewater stream, PWEA believes that water resource recovery plants should continue participation in and promote both energy conservation efforts and traditional renewable energy activities, including the following:

- Solar radiation or wind captured at facilities
- Electrical or mechanical energy from hydropower of plant influent or effluent
- Energy conservation through energy efficient systems, monitoring, and controls
- Ongoing energy-use when evaluating projects through present worth or full life cycle analysis
- Implementing and updating outdated technology with new energy efficient mechanical equipment
- Capture and/or re-use fats, oils and greases (FOG)

PWEA believes that state and federal agencies should fully endorse, recognize the benefits, and provide funding to research and capitalize on the opportunities for all renewable energy derived from, or associated with, wastewater treatment. Current incentives that should be directed toward energy recovery projects associated with wastewater treatment and biosolids management include:

- Clean Renewable Energy Bonds (CREBs) & Qualified Energy Conservation
- Bonds (QECBs): Administered by the IRS, these no-interest bonds used for hydropower and large solar

or wind energy sources should be made readily available for municipal wastewater and biosolids energy recovery projects.

- Renewable Energy Production Incentives (REPI): Administered by the U.S. Department of Energy (DOE), grants made available to non-federal tax paying entities producing renewable energy.
- State Energy Programs (SEPs): DOE funding to states with policies to establish Revolving Loan Funds (RLF's) to support renewable energy projects. A specific program should be launched for municipal wastewater and biosolids to energy projects to advance both State and Federal renewable energy goals.
- State Renewable Portfolio Standards (RPS): Pennsylvania should continue to support and recognize that energy derived from water resource recovery and biosolids management should be recognized as renewable energy.

In addition to the current tools and technologies available for commercial use at water resource recovery plants, PWEA supports current research of technologies that has the potential to further enhance the renewable energy contribution from wastewater, including but not limited to:

- Biofuel generated by using carbon and nutrients in wastewater for growing algae
- Biofuel energy via microbial fuel cells
- Thermal conversion of biomass (biosolids) from gasification or pyrolysis