

Resource Recovery: Solids and Treated Water

Recovering resources

Resource recovery could include — with BC Ministry of Environment approval — reusing of thermal energy in the wastewater, methane generated in the treatment process, and treated water and solids (biosolids) left over after wastewater treatment. Maximizing resource recovery from wastewater treatment can save money, generate heat and/or power and benefit the environment.

Biosolids

Biosolids are the end product of the wastewater treatment process derived through microbial digestion and other treatment processes. They are often reduced in volume by the removal of water and made safer for the environment by the removal of most pathogens.

The use of biosolids from wastewater treatment is regulated by the BC Ministry of Environment. Current board-approved policy in the CRD does not allow the use of biosolids for land applications (fertilizer). The CRD is currently exploring other options for beneficial use of biosolids.

Municipalities and regions make the decision on whether to recycle biosolids, landfill them, incinerate or gasify them. This decision is ultimately determined by social, economic and environmental goals and objectives.

Transportation of solids

From the wastewater treatment facility, solids can be transported by pipeline, trucks, train or boats to a facility where they can be further processed or utilized. Opportunities may exist in the future for both biosolids and municipal garbage to be processed together to generate power or heat.

Treated water

Treated water that meets environmental standards can be disposed into the ocean, into the ground, or into rivers, streams and freshwater lakes with BC Ministry of Environment regulatory approval. It can also be potentially reused for toilet flushing and other non-drinking uses, for industrial cooling, or for irrigation of golf courses, agricultural crops, aquifer recharge, wetland habitat restoration and urban landscaped areas.

Reclaiming wastewater frees up fresh water that can be used elsewhere for drinking and can be a critical part of water conservation efforts, particularly in arid climates. One of the challenges with utilizing reclaimed water is the development of infrastructure such as purple pipes (reclaimed water pipe system) that would transport the treated water for reuse. Areas that have new construction developments are more likely to benefit from reclaimed water as the infrastructure can be built into these new developments from the start.

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What else can be recovered?

Examples of recovered resources include:

Heat: Thermal energy from raw sewage can be captured at the wastewater treatment plant or pumping stations and used to heat the facilities. Excess heat energy can also be distributed throughout the local community to heat homes and buildings.

Biogas: Residual solids are often treated using anaerobic digestion to reduce solids, kill pathogens, and generate methane gas (biogas) for use onsite in the plant or offsite in the natural gas distribution system.

Syngas: Residual solids can be gasified to produce syngas (synthetic gas) for production of heat, electricity or derivative fuels. Organic waste and kitchen scraps can also be included with the residual solids.

Phosphorus: Struvite, which is a form of phosphorus, can be extracted from the residual solids and then used in fertilizer.

A Resource Recovery Centre

Resource Recovery Centres often contain a number of different technologies and processes, including:

- anaerobic digestion tanks
- residual solids dewatering
- a receiving station for fats, oils, and grease (FOGs)
- gas flaring units
- phosphorus recovery facilities
- odour control facilities
- a biogas purification facility

Figures 1 and 2 show how wastewater solids can be utilized through a gasifying process (1) and a digester process (2).

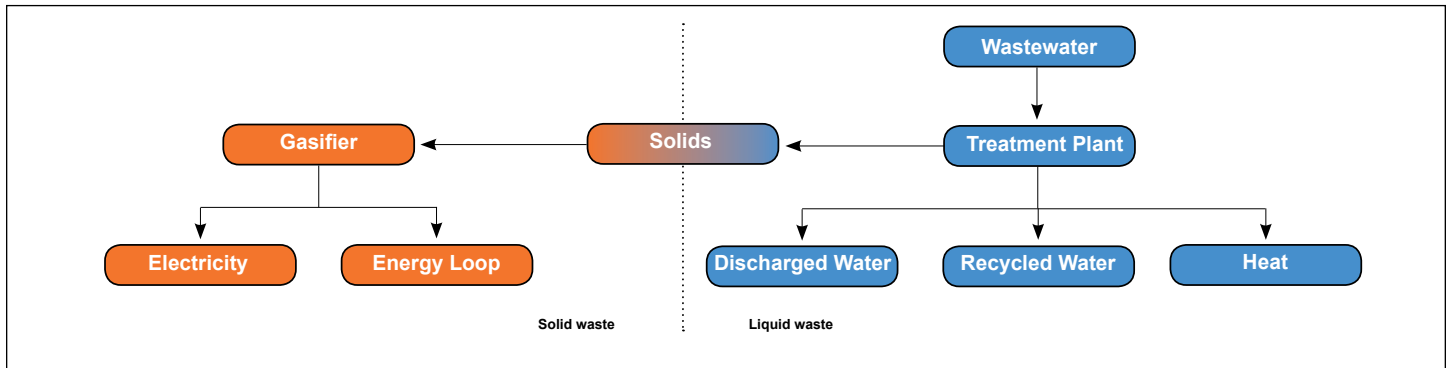


Figure 1: wastewater solids to gasifier

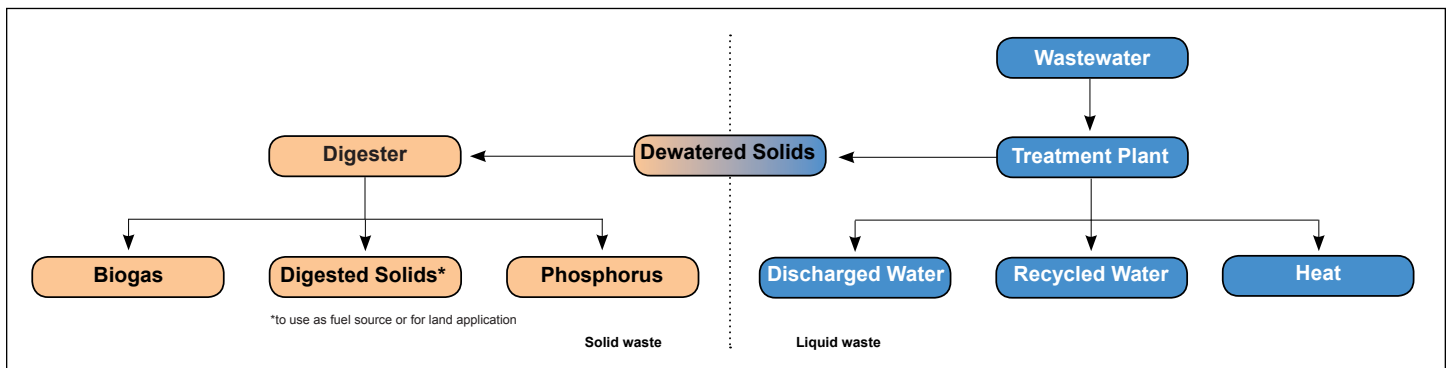


Figure 2: wastewater solids to digester