

# BIOREACTOR LANDFILL GAS-TO-ENERGY

Through the use of leading-edge technology, Aquatera's Landfill is able to capture naturally occurring methane gas from decomposing waste and convert it into the gas to heat and power the adjacent Water and Wastewater Treatment Plants. This project was an \$8 million dollar capital investment.

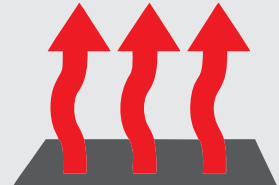
Key environmental values and benefits of the Bioreactor Landfill Gas-to-Energy Project include:



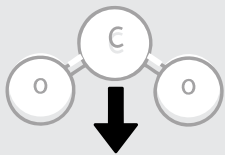
Producing an average of 15.2 million kwh of electricity on landfill gas alone annually - which is enough energy to power 14,000 homes per year.



Improving air quality, and reducing odors at the landfill by minimizing the surface emission of methane gas.



Producing approximately 33,000 GJ of heat annually, on landfill gas alone - which is enough to heat 200 homes per year.



**GREENHOUSE GASES**

This significantly reduces Greenhouse Gas (GHC) emissions as well as utility costs, while improving air quality.



Emissions are reduced by approximately 63,000 tonnes annually, equivalent to removing 13,500 vehicles from the road each year.



Revenue from carbon offset credits earned from reducing our environmental footprint, combined with cost-savings from generating our own heat and power, provides us with an opportunity to stabilize rates for Aquatera customers.

## How does it work?

The process begins with our customers at the curb. Garbage collected in our landfill is compacted in layers in engineered landfill cells. Organic waste decomposes very quickly, breaking down at a faster rate than other waste. Because organics quickly decompose, they not only produce more landfill gas, but free up space in the landfill for more waste.

Fluid called leachate, which is collected in our bioreactor, is re-circulated along with other fluids into the waste to enhance decomposition. Traditionally, landfill gas emitted from decomposing waste escapes into the atmosphere. However, at Aquatera's bioreactor landfill, this gas is collected through pipes drilled into or laid in the cells.

The mix of organic waste and garbage with bioreactor technology accelerates decomposition, increasing the overall lifespan of our landfill. Speeding up the decomposition process also accelerates landfill gas production. Gas captured by the pipes is pumped to a generating station. There, all water is removed, and the gas—primarily methane—is burned. When methane gas (which is 23 times more damaging to the ozone than carbon dioxide) is burned, it powers an engine that turns generators to make heat and electricity. Our Water and Wastewater Treatment Plants uses our own green energy to continue to produce high-quality tap water and high-quality treated wastewater for return to the Wapiti River.

