

CIRCULAR ECONOMY: LANDFILL GAS TO ENERGY

1.

Waste Collection & Transportation

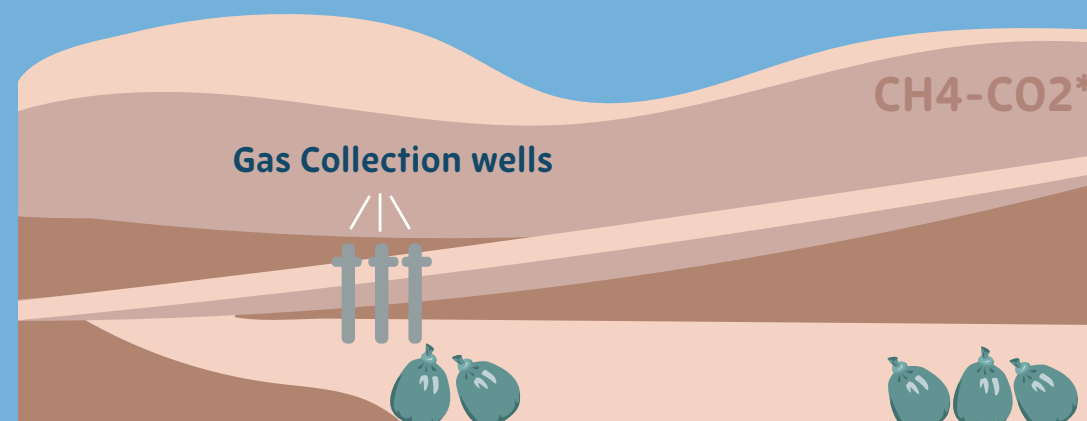


The cycle begins with the collection of residential and commercial waste. Waste is transported to City of Greater Sudbury's (CGS) main landfill for permanent disposal. Once buried, organic waste is digested by anaerobic bacteria producing landfill gas (a combination of carbon dioxide and methane, commonly known as natural gas).

2.

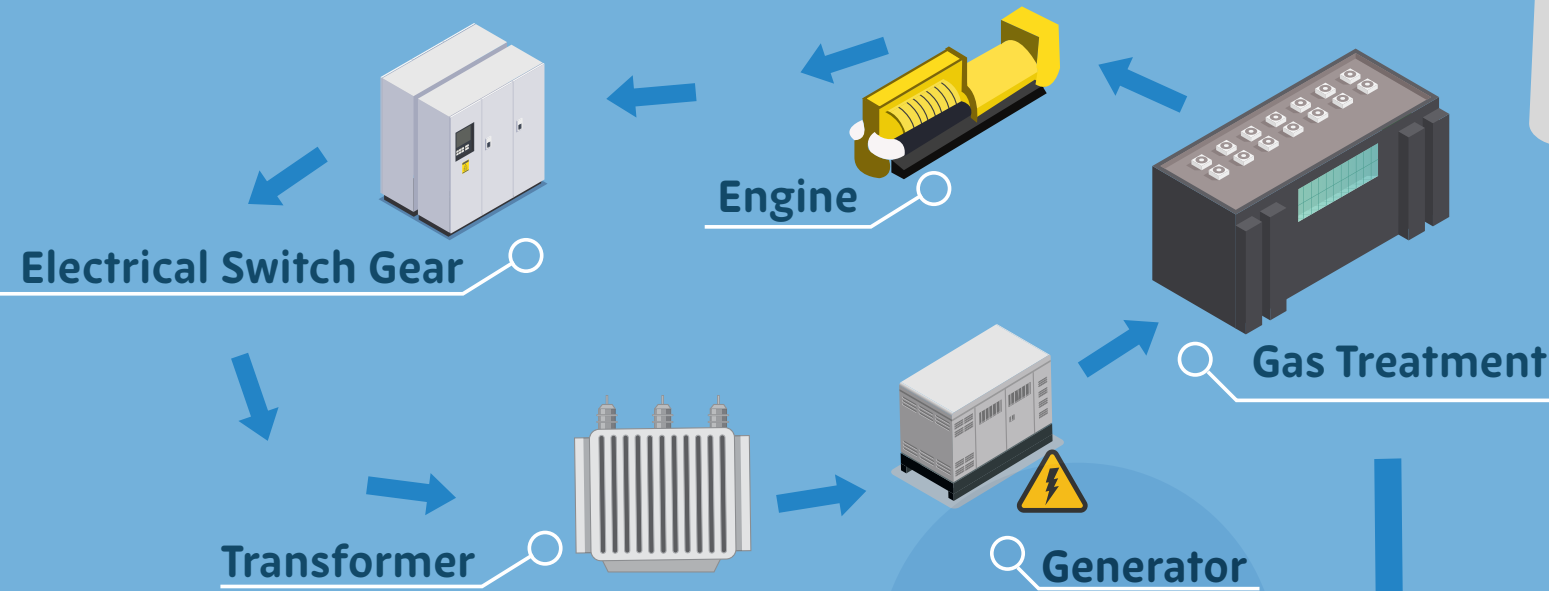
Landfill Gas Collection

Landfill gas is collected by the embedded network of pipes in the waste, where under vacuum, the gas is directed to the gas treatment unit or flare.



3.1

Convergen purchases raw landfill gas from CGS, treats and optimizes the gas as fuel for an industrial, stationary engine. Combustion allows for energy conversion from chemical to thermal and mechanical and the generator from mechanical to electrical energy. The renewable electricity is then fed into the grid's distribution system which provides power to local infrastructure



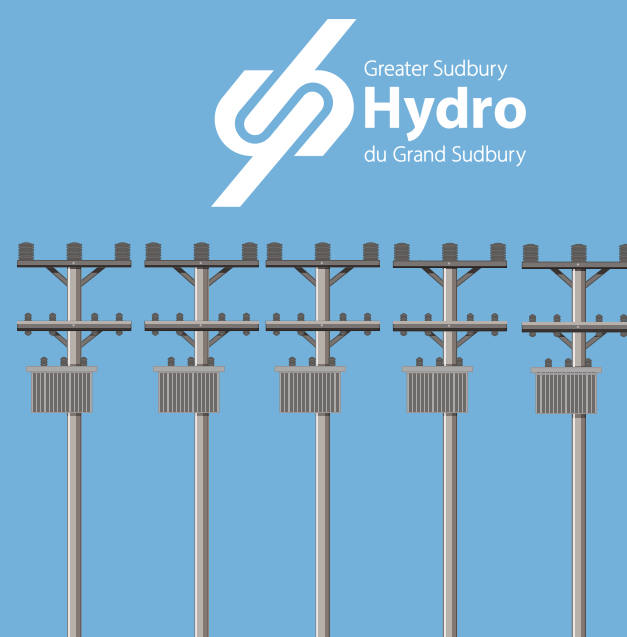
3.2

The flare will only operate when the engine is down for maintenance. In smaller, conventional landfills without engines, the flare operates continuously combusting harmful methane gas to a less harmful GHG, carbon dioxide. However, without an engine, a circular economy, along with financial and sustainable gains, are lost by the municipality

4.

Benefits to community and local distribution company (LDC)

- Reduce greenhouse gas emissions", "Sustainable electricity generation"
- Financial returns for CGS and ConverGen
- Sustainable generation



Grid Power Electricity

*Landfill gas is typically 50 - 55% methane (natural gas), 40 - 50% carbon dioxide, 2 - 5% other gases such as sulfides.