



TIPPING THE BALANCE

Energy Developments Limited is tapping into two landfill sites in the nation's capital to generate clean, renewable GreenPowerTM electricity from organic waste (biomass).

The Mugga Lane and West Belconnen landfills in Canberra, ACT, together generate around 27,500 megawatt hours of GreenPower annually. That's enough to power about 4,000 homes per annum or a town about the size of Katherine in the Northern Territory or Bairnsdale in Victoria.*

The renewable energy supplied by these two landfills is cutting Australia's greenhouse gas emissions by 117,000 tonnes per annum – equivalent to removing nearly 30,000 cars from our roads#.

Where does your garbage go?

The presence of household and industrial waste remains long after we've forgotten whose turn it was to put out the bins. Over time the landfills start to generate gas from decomposing organic waste deposited there.

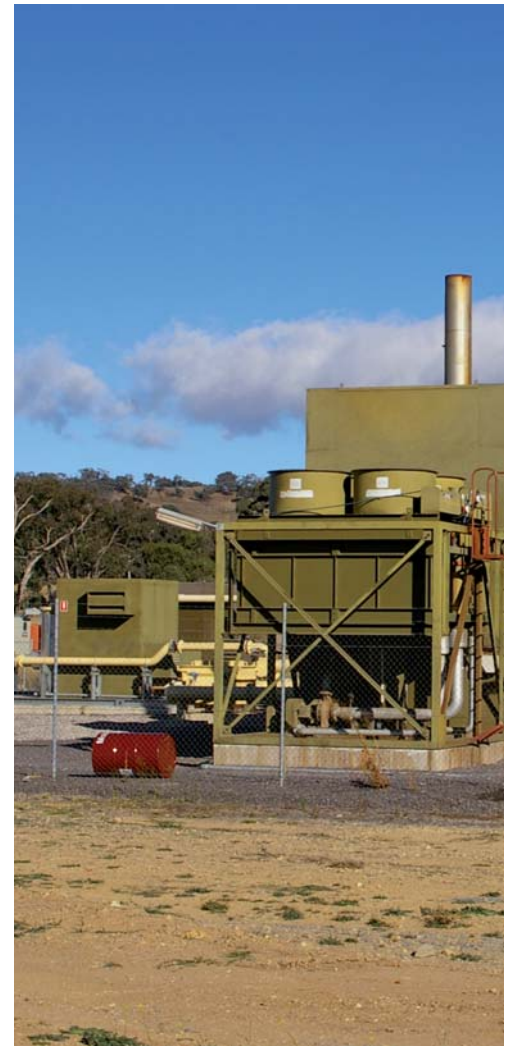
The gas consists mostly of methane and carbon dioxide, together with quantities of water vapour. The substantial methane

gas being generated in landfills enables it to be used as a fuel for power generation. However to use the gas it has to be extracted from the landfill.

Energy Developments Limited has developed a process that does this by drilling a pattern of vertical gas production wells across the landfill site to provide a consistent gas flow.

The wells are linked by an underground pipe network to a central gas collection facility. The entire system is maintained under a vacuum which helps to draw the gas into the collection facility where it is processed to reduce moisture levels and filter out fine particles.

The processed gas is then used as a fuel in a gas reciprocating engine to produce GreenPower.



Mugga Lane power station.

How it works

01

Organic waste in landfills generate methane gas



02

Methane gas is fed into a series of vertical gas production wells drilled across the landfill



03

Wells linked by underground piped to a collection facility

04

Gas is fed to a turbine to generate renewable electricity



05

Clean renewable electricity fed into grid





✓ The problem

It's the heat trapped in the atmosphere by greenhouse gases like water vapour, carbon dioxide, methane, and nitrous oxide that causes global warming. When it comes to the individual impact of greenhouse gases methane is more harmful as it traps 21 times more heat than carbon dioxide.

✓ The solution

Instead of the methane being burnt as a waste gas, this process captures and transforms it into a valuable resource - renewable energy.

Removing the methane gas from these two landfills and offsetting the amount of fossil fuels needed to generate electricity is reducing Australia's greenhouse gas emissions by an estimated 117,000 tonnes of carbon dioxide (standard greenhouse gas measurement) per annum - equivalent to removing 30,000 cars from the road for a year.

✓ World landfill leaders

Mr Wal Hammond, Operations Manager NSW/ACT, says Energy Developments Limited is a world leader in landfill gas power generation.

"Energy Developments build, own and operate power stations. Our core business is remote area power generation and power generation from waste gases such as from landfills and coal mines.

"Our company has over 60 projects in operation and under development in Australia, the United Kingdom, Greece, France, Taiwan, and the United States of America.

We see the ACT landfill sites as great opportunities for environmentally responsible and as economically attractive business," he said.

✓ GreenPower is driving renewable energy

Energy Developments Limited is an accredited energy supplier for the GreenPower program.

Auditing and checks are completed by government representatives as part of registration and continued compliance systems for the GreenPower scheme.

GreenPower approved generators comply with stringent environmental standards and the GreenPower accredited component of electricity products must be 100% 'new' renewable energy ('new' renewable energy is sourced from generators which have been built after 1 January 1997.

GreenPower accreditation provides assurance that the renewable energy a customer purchases is reducing greenhouse gas pollution and helping to develop a robust renewable energy industry in Australia.

✓ Support a greener future for all

Landfill gas power plants are just one of the ways biomass can be used to generate accredited GreenPower. Australia is leading the way in terms of the technology needed to convert waste to clean, green energy. But if we are to reduce greenhouse pollution from electricity then more Australian households and businesses need to purchase accredited GreenPower to fund the long-term development of clean, renewable energy. The result will be a better, brighter future for all Australians.

✓ At a Glance

Energy fuel:

Electric power from landfill gas fuelled reciprocating engine

Owner/Operator:

Energy Developments Limited

Partner:

ACT NOWaste

Location:

West Belconnen and Mugga Lane Landfill Gas Power Plants, Canberra, ACT

Energy Output:

Around 27,500 megawatt hours annually - equivalent to powering about 4,000 homes

Greenhouse Gas Abatement:

117,000 tonnes - equivalent to removing nearly 30,000 cars from our roads

*Calculations: Based on an average Australian household's use of 6.47 megawatt hours per year, 27,500 megawatts will supply about 4,000 households a year - with an average household size of 2.6 people it equates to a town of more than 11,000 people.

4.33 ton of greenhouse gas per car

For more information visit www.greenpower.gov.au or call your energy supplier today to find out how you can make the switch to clean, renewable GreenPowerTM or visit Energy Developments Limited at www.edl.com.au