Queensland First - Storing, Dispatching and Distributing Renewable Energy from Landfill

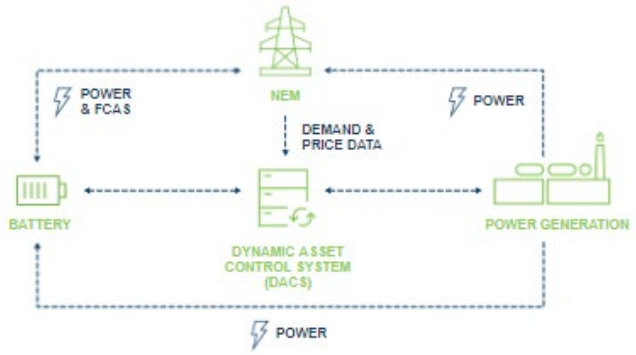
Storing landfill-generated power in an onsite battery and dispatching it into a local distribution power grid. A world first - connecting a battery to a Jenbacher 312 engine to the distribution grid with active voltage management.

Capturing landfill gas before it enters the atmosphere is a major step in solving the problem of harmful methane emissions from waste. Converting this gas into renewable energy, storing and then dispatching it to the grid maximises the potential available in every last molecule.

In close collaboration with Moreton Bay Regional Council, this is exactly what LGI does at the Bunya Waste Management Facility. Initially installing an extraction and management system to capture the gas and abate methane emissions using a flare, LGI upgraded the site in 2018 to produce renewable power. In 2023 LGI transformed it into a renewable hybrid by adding a Battery Energy Storage System (BESS) with a 1MW/2MWh Tesla Megapack.

LGI's Dynamic Asset Management System (DACS) integrates the battery with the power station, the landfill, the local power grid and the National Energy Market (NEM).

Dynamic Asset Management System (DACS)



After two years in development, this pioneering battery technology sets up significant benefits for Council, the region and its residents. Where previously the generator could respond in minutes, with batteries the project can store and dispatch renewable energy generated with biogas from this landfill within seconds.

"Landfills are sizable emitters of harmful greenhouse gas. However, the Bunya Renewable Power Station significantly reduces the emission rate and the battery pack means we'll be able to store power and export it more efficiently during high demand periods and when other sources of renewable energy like solar are less available."
City of Moreton Bay Mayor, Peter Flannery

"This means LGI can generate and store or dispatch and distribute renewable energy in seconds from the Bunya Waste Management Facility, when and where it is needed, helping to stabilise the local electricity system."
LGI Chief Operating Officer, Jarryd Doran

The success of the project makes room for the rollout of onsite batteries at other renewable energy sites across Eastern Australia.

Since 2018, the environmental benefit of removing harmful methane from the Bunya landfill has been significant, with benefits mounting exponentially as the years of operation climb.

Here are the stats so far*

Biogas Captured m^3
23.5 million m^3

Energy Generated
28 GWh generated since December 2018

Operational
24hrs/day, 7 days/week

Emissions (t CO_2e) reduced by
223 thousand tonnes

That's the equivalent benefit of planting 3.7 million seedlings over the next 10 years!

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* Results Achieved to October 2024

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LGI's partnership with Moreton Bay City Council comes at no cost to local ratepayers and provides Moreton Bay City Council with a percentage of power station revenue and Australian Carbon Credit Units (ACCU) generated by the project.

This has turned a costly waste management facility into a highly productive asset that no longer poses a risk to environmental or human health.

- ✓ **Dispatchable, flexible renewable energy**
- ✓ **Converts methane into less harmful CO_2 to cut greenhouse gas emissions**
- ✓ **Stores energy in batteries for efficiency**
- ✓ **Improves local air quality and reduces landfill odours**
- ✓ **Creates an income stream for council**
- ✓ **Reduces demand for fossil fuels**
- ✓ **Stabilises the local electricity system**
- ✓ **Best practice landfill management**

This is another example of how sustainable energy generation continues to reach new heights and expand into territories previously thought impossible. It's an exciting time to be part of such important work and at LGI, we are focused on maximising the layers of benefit across Australia, one landfill at a time.



It takes a negative and puts it into a positive for the community and Go Green as we Grow is our focus in Moreton Bay.

- Peter Flannery,
Moreton Bay City Countil Mayor

People engineering, a clean energy, zero carbon future

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