7 March 2023

SUBMISSION ON PRICE DISCOVERY IN A RENEWABLES-BASED ELECTRICITY SYSTEM

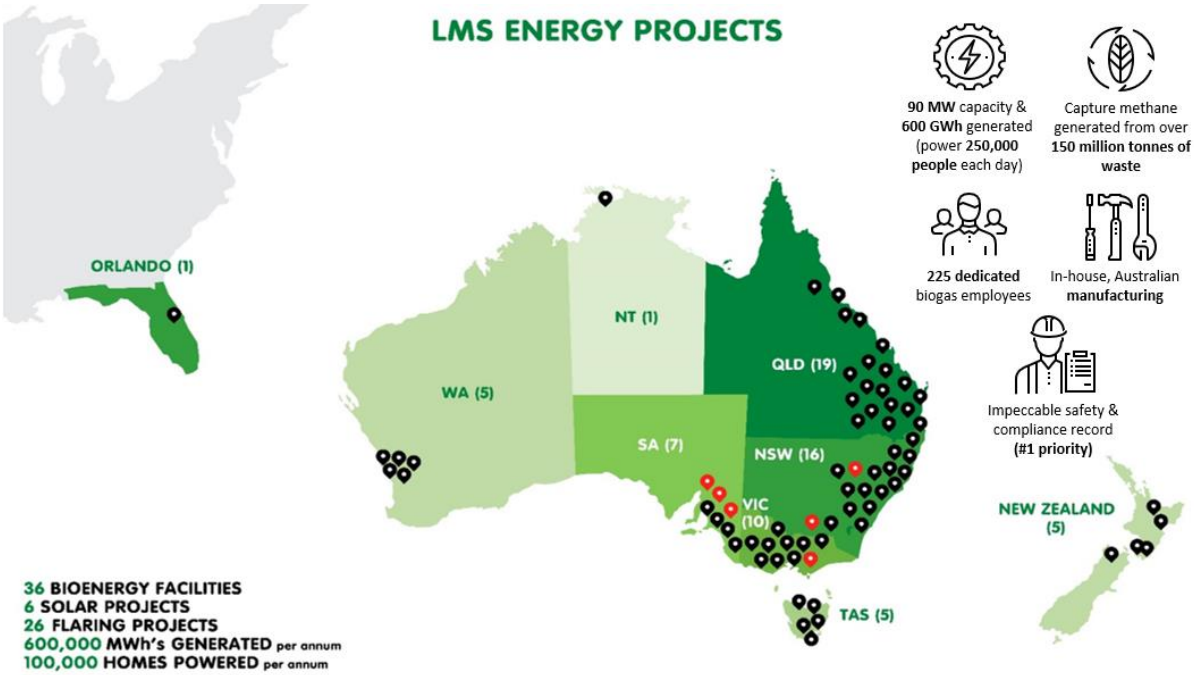
Thank you for the opportunity to provide a submission on the consultation on the Market Development Advisory Group Option Paper – Price discovery in a renewables based electricity system.

LMS Energy (LMS) is pleased to hear that the New Zealand electricity market is projected to achieve 94% renewable generation by 2025, and are conducting actions to enable 100% renewable electricity supply. As a renewable energy provider in New Zealand, LMS is proud to contribute to this share and to help progress New Zealand toward 100% renewable energy generation.

LMS ENERGY

LMS exists to help protect the planet from climate change, and are passionate about protecting the environment and supplying clean, reliable energy. LMS does this by capturing methane emissions produced from the natural decomposition of organic wastes and, **over the last 25 years, LMS have prevented 50 million tonnes of carbon dioxide equivalent (tCO_2e) from entering New Zealand and Australia's atmosphere from landfills.** LMS is Australia's largest methane abatement company and are united in our purpose to achieve a zero carbon future.

LMS is 100% Australian owned and employs nearly 250 people across its facilities in Australia, New Zealand and the USA. LMS captures landfill gas across 5 sites in New Zealand, and transforms this gas electricity.



Landfill gas is typically 50% methane and 50% carbon dioxide. Methane is an extremely potent greenhouse gas, with a global warming potential of 84 times more than CO_2 over a 20-year

timeframe[1]. With the global emissions needing to peak before 2025 if global warming if to be limited to 1.5◦ Celsius[2], it is more important than ever to ensure that methane emissions are captured, which New Zealand has acknowledged with their signing of the Global Methane Pledge and release of *Aotearoa New Zealand's Methane Emissions Reduction Action Plan*[3]. LMS Energy's methane abatement is equivalent to planting 68 million trees over 10 years and taking 1.6 million cars off the road every year.

Each year, LMS sites collectively generate 600,000 megawatt hours of baseload renewable energy, with the ability to expand our New Zealand operations under the right policy settings. Bioenergy (including biogas) is a unique form of renewable electricity providing synchronous, flexible dispatch of renewable energy 24/7, providing important baseload energy and system services. When electricity generation is not feasible, LMS flares biogas to prevent methane emissions releasing to the atmosphere. LMS is also investigating the feasibility of landfill gas storage tanks, which would enable increased provision of LFGtE as required.

LMS work closely with landfill operators and the New Zealand electricity industry to abate the landfill gases generated and provide renewable electricity into the New Zealand electricity market.

LMS is also commencing operation of its Australian made modular ultra-dry anaerobic digestion (AD) facility (patent pending) for pilot use at a South Australian landfill. This innovative technology is supported by LMS' proud history of biogas innovation, Australian in-house design, engineering and manufacturing capability.

Australian first. Anaerobic digestion is a controlled process that enables the capture of biogas, heat and nutrients from suitable organic matter (e.g. food and garden waste collections). Investment in areas such as AD will ensure that methane from organic waste continue to be captured as organics to landfill decline over time.

COMMENTS

LMS is supportive of the electricity sector supporting New Zealand's climate objectives through both reducing its own emissions and enabling New Zealand sectors to convert to renewable energy usage.

Key points:

- LMS **supports utilisation of spot prices** in the electricity market to help enable industry investment to ensure electricity supply will best meet demand.
- **Bioenergy should be considered as a viable method to provide both consistent and flexible electricity generation to help strengthen competition**, and should also be considered as part of the Future Security and Resilience (FSR) project (A2).

[1] Intergovernmental Panel on Climate Change, 2021, *Sixth Assessment Report.*
[2] United Nations, 2022, *Sustainable Development Goals Report 2022.*
[3] Ministry of Foreign Affairs and Trade, 2022, *Aotearoa New Zealand's Methane Emissions Reduction Action Plan,* <https://www.mfat.govt.nz/assets/Climate-Change-Programme-images/Aotearoa-New-Zealands-Methane-Emissions-Reduction-Plan-Summary-Version.pdf>.

- **LMS supports measures that assist to provide additional certainty for future investments** in renewable energy infrastructure (such as B2 and E5).
- In moving toward 100% renewable electricity, New Zealand should consider the **co-benefits** that a range of renewable electricity generation sources can have, such as further decreasing the methane emitted to atmosphere.

Spot pricing

LMS' operations are carbon negative. LMS' technologies capture the methane from landfills destroy it through the use of our electricity generating engines. These practices abate the greenhouse gases at the same time as utilising them for the beneficial reuse of renewable electricity generation.

As **landfill gas is generated 24/7** no matter the weather, landfill gas to electricity (LFGtE) practices are a **reliable, constant source of renewable electricity**. In addition, this source provides response capacity that is **flexible**, in that it only takes a few minutes to power up the electricity generating engines. This enables the generation of electricity to be dispatched in response to spot market pricing , providing renewable electricity to meet the flexible demand of the market.

As noted above, LMS are supportive of the continued and expanded use of spot pricing in the New Zealand electricity market. As detailed in the options paper, this will assist to support investment in more renewable electricity generation sources such as LFGtE that can provide flexible, on-demand renewable electricity, no matter the time of day or weather.

Bioenergy and co-benefits

Electricity produced from biomass sources, such as the anaerobic digestion of organic wastes in landfills and anaerobic digestors, is a reliable source of electricity generation, as noted above, that can be used to assist to meet frequency needs in New Zealand's national electricity grid. Support for bioenergy could also assist to strengthen competition in a renewables-based New Zealand electricity grid as a flexible demand source, as well as assist in the ramp-up in new energy supply needed to meet projected demand.

These bioenergy sources have co-benefits for generation of electricity, as they are not only from renewable resources, but they also help to minimise methane emissions from waste from entering the atmosphere, and minimise odour issues at landfills.

New Zealand regulates the methane emissions from landfills, and encourages diversion of organic wastes from landfills (to other processing sources, such as anaerobic digestion) to help to contribute towards a circular economy, and to minimise methane emissions to the atmosphere[4]. Utilising these biogases to generate electricity provides a beneficial reuse for the biogases, while encouraging (through contract and spot-pricing incentives) landfill gas collection above regulated levels.

[4] Ministry of Foreign Affairs and Trade, 2022, *Aotearoa New Zealand's Methane Emissions Reduction Action Plan*

As it stands, New Zealand is sending 350,000 tonnes of waste to landfill each year[5]. Even if landfills stop receiving waste tomorrow, they will still produce emissions for decades to come. Methane abatement is an important climate strategy to reduce the impact of this waste.

Investment certainty

Infrastructure for landfill gas capture and subsequent renewable electricity generation involves significant investment. Forecasts for demand and understanding of future policy settings are required to enable economic analysis for such commercial investments.

Options that would assist to improve understanding of future demand, such as B2, would assist to provide additional confidence in future investment decisions.

We thank you for considering our submission. LMS would be happy to discuss any aspect of this information or any further queries as may be helpful. Please feel welcome to contact me by email meagan.wheeler@lms.com.au or mobile +61 448 618 939, or Patrick Lim, Group Manager – Carbon and Energy, by email patrick.lim@lms.com.au or mobile +61 427 104 870.

Yours sincerely

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[5] Ministry for the Environment, 2021, 'Estimates of waste generated in Aotearoa New Zealand', <https://environment.govt.nz/facts-and-science/waste/estimates-of-waste-generated/#total-tonnage-of-waste-to-class-1-landfills>.