Kia ora,

Please find attached our formal submission in response to the Electricity Authority's Decentralisation.Green.Paper.

Our submission outlines the opportunity for integrating **Waste to Energy** as a viable Distributed Energy Resource (DER), with a focus on **Moving Injection Horizontal Gasification (MIHG)** technology. This approach delivers dispatchable, low-emission energy while addressing critical waste and emissions challenges, and supports the vision of a more decentralised, equitable, and resilient electricity system for Aotearoa.

We welcome the authority's direction and would be pleased to provide further technical information or participate in future workshops and pilot planning processes.

Ngā mihi,

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Submission to the Electricity Authority

Subject: Enabling Decentralised Electricity Through Waste to Energy Using Moving Injection Horizontal Gasification (MIHG) Technology

Submitted by: Bioenergy Limited

Date: Tuesday, 6th May 2025

1. Introduction

We commend the Electricity Authority for initiating a national conversation on the future of our electricity system through its Decentralisation Green Paper. This is a visionary and timely step in shaping a clean, secure, resilient, and inclusive system. We strongly support the Paper's aim to empower local communities and promote diversified, low-emission energy sources.

This submission proposes formally recognising and including Waste-to-Energy (WtE) solutions in the Authority's decentralised electricity framework, focusing on Wildfire Energy's innovative Moving Injection Horizontal Gasification (MIHG) technology. The solution represents a transformational opportunity to align electricity generation with sustainable waste management, local economic development, and community-led climate action.

New Zealand generates over 17 million tonnes of waste annually, a significant portion of which ends up in landfills. Simultaneously, many communities face rising energy costs, unreliable supply during peak times or emergencies, and limited access to low-emission energy infrastructure. The deployment of MIHG offers a dual benefit: transforming local waste into usable, dispatchable energy while reducing environmental burdens and dependency on centralised fossil-based generation.

2. Summary of Proposal

We respectfully request that the Electricity Authority:

1. Formally recognise advanced Waste to Energy technologies such as MIHG as Distributed Energy Resources (DERs) within the regulatory framework for decentralised systems.
2. Support pilot projects demonstrating MIHG technology under the Power Innovation Pathway, with a view to replication and scale.
3. Enable pathways for community, iwi, and local authority ownership of WtE assets through streamlined consenting, market access, and funding facilitation.
4. Coordinate regulatory settings across MBIE, MfE, EECA, and local councils to align waste reduction, emissions mitigation, and energy transition strategies.

3. About MIHG Technology

Moving Injection Horizontal Gasification (MIHG) is a modular, scalable gasification system that converts unsorted municipal and commercial waste into a clean syngas. This syngas can be used directly for electricity generation, heating, or upgraded into green hydrogen or liquid fuels.

Unlike conventional incineration, MIHG does not combust waste. Instead, it thermally converts waste in an oxygen-limited environment at controlled temperatures, avoiding harmful emissions such as dioxins or furans. The system is specifically engineered to handle variable waste streams, making it well-suited to community-scale deployment without extensive pre-sorting.

Core Features:

- Modular configuration allows for rapid deployment and flexible sizing.
- Baseload-capable generation supports energy security and grid stability.
- Significantly reduces methane emissions from organic waste in landfills.
- Residual ash output is inert and may be used in construction or road base.
- Remote monitoring and digital integration with local energy management systems.

4. Strategic Alignment with the Green Paper

The MIHG solution aligns with all four decentralisation priorities articulated in the Green Paper:

a. Distributed Energy Resources (DERs)

- MIHG qualifies as a firm, dispatchable DER suitable for microgrids, embedded networks, or community-scale systems.
- It supports energy balancing alongside variable renewables (solar, wind), enhancing reliability.

b. Democratised Ownership and Governance

- Local government, iwi, community energy trusts, or cooperatives can jointly own and operate MIHG infrastructure.
- Supports place-based decision-making and enhances local economic self-determination.

c. Digitalisation and Data-Driven Management

- MIHG units feature remote telemetry and are compatible with smart meters, DERMS, and Virtual Power Plants.

d. Consumer Trust and Engagement

- MIHG sites are visible and tangible community assets, increasing transparency, accountability, and participation.

5. Expanded Co-Benefits of MIHG

Environmental Impact

- Reduces landfill use and related emissions (methane, leachate).
- Supports New Zealand's Emissions Reduction Plan and Waste Strategy.
- Enables circular economy outcomes through energy recovery and by-product utilisation.

Energy Security and Resilience

- Provides continuous, local power generation capacity.
- Ideal for supporting Civil Defence hubs, essential services, and remote locations.
- Capable of off-grid or grid-tied operation with islanding potential.

Economic and Social Development

- Generates skilled employment across operations, maintenance, logistics, and engineering.
- Reduces waste transportation and landfill gate fees for local authorities.
- Local reinvestment of energy revenues into community initiatives.

Equity and Access

- Can be community-funded or council-owned to ensure inclusive benefits.
- Reduces energy hardship by lowering local energy prices or enabling rebates.
- Equitable access models via community energy trusts or power-sharing platforms.

6. Addressing Identified Challenges

Upfront Capital Cost

MIHG's modular design enables phased investment. A typical unit requires less capital than a traditional waste facility or centralised generator. Co-investment models involving local councils, government funds, or green bonds can support deployment.

Governance Complexity

Shared ownership frameworks and well-established governance models (e.g., council-controlled organisations, Māori incorporations) can support WtE implementation.

Market Participation

Recognition of MIHG as a DER will enable participation in local energy markets, peer-to-peer schemes, or export tariffs under future regulatory settings.

Equity

By allowing public or cooperative ownership, MIHG avoids energy wealth concentration and supports fair distribution of benefits.

System Integration

MIHG's predictable output complements variable renewables and supports load smoothing, peak shaving, and frequency regulation.

7. Case for a National Demonstration Project

To catalyse progress, we propose a national demonstration of MIHG technology under the Authority's Power Innovation Pathway. Such a pilot would:

- Validate integration with distribution networks and local energy systems.
- Develop and test funding, ownership, and governance models.
- Generate real-world emissions, performance, and social impact data.
- Provide a template for replication across multiple locations.

Preliminary discussions have begun with local authorities, central government agencies, and stakeholders in the waste sector. The timing is right to move from interest to action.

8. Conclusion

New Zealand's electricity system decarbonisation must be climate-conscious and community-led. Including Waste-to-Energy technologies like Moving Injection Horizontal Gasification is vital to achieving this vision. MIHG aligns with the decentralised future envisaged in the Green Paper while addressing longstanding waste, emissions, and local infrastructure challenges.

We encourage the Electricity Authority to:

- Explicitly include WtE technologies in the regulatory definition of DERs.
- Support a pilot-scale deployment of MIHG in partnership with local government.
- Develop pathways for equitable, community-led ownership and benefit sharing.

We welcome the opportunity to present this proposal further and assist in technical, operational, or policy design work.

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