Submission to the Electricity Authority – Green Paper on Decentralisation
Title: *Working Together to Ensure Our Electricity System Meets the Future Needs of All New Zealanders*
Submitted by: JP Gardiner, Optimal Protocol
Date: 25 June 2025

To the team at the Electricity Authority,

Thank you for the opportunity to provide feedback on this important consultation. I appreciate the Authority's willingness to open up the conversation and invite a wide range of voices into the process. The decentralisation of our electricity system is a critical challenge – and a significant opportunity – for Aotearoa.

Please find my submission below, reflecting my work in sustainable energy, digital infrastructure, and rural decarbonisation.

Opening Statement

Decentralisation isn't just a technical shift – it's a cultural and economic one. It represents a new phase in how New Zealanders engage with electricity: not just as passive consumers, but as active participants, producers, and guardians of local resilience.

From the farms of Canterbury to urban rooftops and remote marae, the tools now exist for communities to generate, store, and share their own energy. But the rules, incentives, and infrastructure have not kept pace. This submission reflects my experience working with rural, commercial, and community clients navigating this transition. It also reflects a belief that the next phase of electricity reform must unlock participation – not reinforce old hierarchies.

Question 1

Do you agree with the description of decentralisation? If not, why not?

Yes – the Authority's description provides a solid foundation, capturing decentralisation as a shift in decision-making, asset ownership, and control of energy flows towards consumers and communities. It correctly recognises the role of distributed energy resources (DERs), digital technologies, and consumer agency.

That said, it's important to clearly distinguish:

- DERs – the physical assets (solar, batteries, EVs, flexible loads)

- Virtual Power Plants (VPPs) – the digital and market coordination layer that enables DERs to participate in broader system optimisation.

VPPs remain a useful and relevant term when framed as software-driven, market-integrated systems that orchestrate DERs to provide both local and system-wide value.

By naming both the physical and digital layers of decentralisation, we can avoid siloed thinking and ensure governance frameworks enable participation at scale.

Question 2

Do you agree with the articulation of the potential outcomes and benefits from decentralisation for consumers? If not, why not?

Broadly yes – the paper rightly identifies resilience, affordability, emissions reduction, and increased consumer choice as key benefits. These outcomes are real and significant, particularly for communities currently facing rising electricity prices, capacity constraints, or exposure to extreme weather events.

However, the list could go further. Decentralisation has the potential to:

- Create new income streams for households and landowners through export and flexibility participation
- Enable economic diversification in rural and regional areas
- Build resilience not just at a household level, but across whole communities and industries
- Drive bottom-up innovation and business model transformation through open access to data, market signals, and pricing flexibility

When decentralisation is done well, it's not just a technology shift – it's an economic and social opportunity.

Question 3

Do you agree with the challenges we've identified? If not, why not?

Yes – and I'd like to highlight several further challenges that need attention:

- Tariff asymmetry and poor price signals: The current structure undervalues exports and flexibility. Without symmetrical tariffs and dynamic signals, we throttle the business case for DERs and batteries.

- Limited access to markets for aggregators and third parties: VPP operators and DER owners need clear rights to participate in flexibility and non-wires alternative markets, including visibility of network constraints and dispatch needs.
- Retailer limitations: Many DER households are locked into inflexible offerings and cannot benefit from dynamic pricing or participate in VPPs due to vertically integrated barriers.
- Equity gaps: Māori, rural, and community-led initiatives often face capital, capability, and connection barriers – not a lack of interest.

Decentralisation without structural reform risks creating a two-tier system. We need to address both access and incentives head-on.

Question 4

Do you agree with the articulated opportunity statement for a more decentralised electricity system? If not, why not?

Yes – the statement rightly recognises that the future system will be shaped not only by technology, but by people, institutions, and governance. The call for collaboration between government, iwi, networks, communities, and innovators is essential.

To strengthen this direction, I recommend:

- Clarifying the role of Distribution System Operators (DSOs): Lines companies must evolve from passive asset managers to active grid enablers, optimising local flexibility and DER integration.
- Backing regional and community-led initiatives with funding pathways, legal clarity, and planning support.
- Enabling regulatory experimentation through sandboxes and pilot exemptions to trial new approaches before locking in rules.

The governance conversation needs to be as bold and imaginative as the technology conversation.

Question 5

What do you think a more decentralised electricity system might look like?

A decentralised system would be federated, flexible, and intelligent.

Structure:

- Thousands of DER clusters – rooftop solar, batteries, EVs, smart irrigation, heat storage – coordinated via VPPs or local energy platforms
- Local optimisation of generation, load, and storage, integrated into national markets and dispatch

Operation:

- Consumers choose from dynamic tariffs, flexibility services, and export options
- Distribution businesses manage real-time congestion, voltage, and flexibility locally
- Communities own or co-own infrastructure, creating long-term resilience and wealth

Key enablers:

- Symmetrical tariffs and transparent flexibility pricing
- Interoperable standards for devices and platforms
- Revenue certainty for DER participation in local and national markets
- Open network data and APIs to encourage innovation
- Inclusive planning processes involving iwi, councils, and communities

---

Question 6

What are other emerging case studies we could learn from?

In addition to the paper's examples, I'd highlight:

- Counties Energy – Karaka Harbourside DSO Pilot: Real-time DER management across 500+ homes, improving voltage and deferring upgrades
- Rewiring Aotearoa's Electrification Trials: Whole-home electrification paired with DER and tariff optimisation for cost, comfort, and emissions savings
- Hollyfort Farm (Mid-Canterbury): A proposed VPP-style concept integrating solar, battery storage, irrigation flexibility, and market participation in a rural context
- Community-led microgrid proposals in Castle Hill, Tākaka, and other areas with strong social capital and local vision

These case studies demonstrate the power of local initiative – especially when supported by enabling regulation and infrastructure.

Closing Remarks

The green paper signals a welcome and necessary shift in tone. But now the real work begins.

We need policy that opens doors – not just describes what's on the other side. That means removing barriers to DER participation, introducing fair and flexible pricing, and resourcing the communities and third parties ready to lead.

Decentralisation offers more than system efficiency – it's an opportunity to build resilience, equity, and innovation from the ground up. I encourage the Authority to lead with courage – and create the conditions for others to lead too.

☐

Kind Regards,

JP Gardiner

Operations Director

[redacted]

OPTIMAL PROTOCOL

E [redacted]

W www.optimalprotocol.nz

[redacted]

Connect with JP