Energy sector submission to the Ministry of Business Innovation & Employment

2 November 2023

Energy Sector and Government Decarbonisation Framework

The electricity sector is arguably the most critical sector for Aotearoa New Zealand's decarbonisation. To deliver a decarbonised energy system the electricity sector will have to undergo transformational investment and sector change of unprecedented pace and scale. This cannot be achieved without a commitment from both the sector and Government to act.

The Energy Sector and Government Decarbonisation Framework represents the Government and energy sector joining together to create a shared approach to transforming and decarbonising Aotearoa's energy system.

It will help enable the urgent action required at the scale needed to reduce greenhouse gas emissions, while ensuring a secure and resilient supply of electricity throughout the transition to a low carbon energy system.

Collaboration between Government and the sector will most effectively achieve actionable and lasting change to decarbonise Aotearoa's energy system. Government's policy and regulatory settings will provide signals to sector participants to act on decarbonisation.

Sector participants are committed to collective action to enable Aotearoa's energy transition

The way that Aotearoa navigates the global energy transition will be critical to our country's prosperity.

The coming decades will require good 'whole of system' decision making. A joint Government and sector approach is crucial to enable collective action at the pace and scale now required.

In the consultation, Ministry of Business Innovation & Employment's (MBIE) seeks feedback on priorities for government action, whether a new coordination function across the electricity system could play a useful role, and how to balance across security and reliability, and equity and affordability objectives.

A united sector view of priority themes has been developed that are critical to setting up Aotearoa for a successful decarbonisation transition, enabling the system to meet Aotearoa 's energy needs, reduce emissions, and achieve equitable outcomes for all New Zealanders. The focus of this letter to MBIE is to reiterate this united sector view.[1]

The challenge of decarbonising Aotearoa's energy system is complex and requires Government and the private sector to work together to ensure the best outcomes for the country. It is proposed that these priority themes should help guide the development of the Energy Strategy.

[1] Industry participants that have been progressing sector-wide discussions and that express support for this letter include Contact Energy, Electricity Retailers' Association New Zealand, Mercury, Top Energy, Transpower, Vector, Genesis Energy, Meridian Energy, Nova Energy, Unison Networks, Manawa Energy, Orion, PowerCo, Lodestone Energy, Wellington Electricity, Electricity Networks Aotearoa, Independent Electricity Generators Association, Flick Electric, Far North Solar Farm, Helios Energy, Hiringa and First Gas.

Support accelerated renewables development

MBIE's *Measures for Transition to an Expanded and Highly Renewable Electricity System* addresses two priorities that support the accelerated development of renewables: (i) ensuring effective consenting frameworks; and (ii) ensuring market mechanisms are efficient.

Accelerating development of renewable generation would be supported by consenting frameworks that encourage rapid deployment of renewables and enabling infrastructure (high priority), both through optimising existing assets and new developments, while maintaining competitive neutrality.

Regarding the second theme, accelerating development of renewables would also be supported by ensuring wholesale electricity market arrangements enable electricity to play its role, fully and efficiently, in decarbonising Aotearoa. This includes developing measures within the existing energy-only framework to maintain security of supply, particularly during winter peak periods.

Scale up efficient transmission and distribution network investment

Addressing investment incentives and funding for efficient transmission and distribution network enhancements, expansion, and non-network alternatives is crucial to support the transition.

There is widespread recognition that the scale of the investment challenge facing the electricity sector over the coming decades is unprecedented – in particular investment in transmission and distribution network infrastructure.

In the modelling undertaken for sector participants in 2022, BCG and Concept estimated in the 2020s alone operational and capital expenditure of $22bn on distribution network infrastructure, and $8bn on transmission networks. Over the subsequent two decades to 2050, total investment in transmission and distribution networks is estimated to be $70 bn. [2]

Support people and the workforce

The government and sector should work together to ensure that those that experience energy hardship have meaningful and enduring support, and can participate in the transition. The government and sector should work together as hardship is an economy-wide issue that cannot be addressed in isolation.

The sector is currently engaged with Government on initiatives that aim to address energy hardship and is looking forward to the government reporting back on the Energy Hardship Expert Panel's recommendations.

Regarding the workforce, improving diversity and capacity in the sector workforce will be a key enabler to deliver on the transition to a decarbonised energy system. BCG highlight that a significant increase in skilled workforce across the electricity value chain is required to deliver this investment. This would require coordination of the Energy Strategy and the implementation of a sector workforce development strategy. [3]

Drive electrification at pace

The electricity sector can enable rapid decarbonisation of the energy system.

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[2] BCG (2022). *The Future Is Electric: A Decarbonisation Roadmap for New Zealand's Electricity Sector*. Pages 9&17. Available online at https://www.bcg.com/publications/2022/climate-change-in-new-zealand

[3] Ibid. Pages 3 & 14.

This will be driven through electrification by ensuring EV charging infrastructure can be successfully rolled out and electrification projects for households, businesses and large-scale initiatives can be implemented, encouraging load flexibility where possible.

The benefits to consumers of increasing electricity consumption and reducing use of fossil fuels will be significant. Electricity Networks Aotearoa recently commissioned Sapere to examine the impact of electrification on the overall consumer 'energy wallet'.[4] Their analysis showed that even with the increased investment in electricity infrastructure, supporting increased consumer expenditure on electricity consumption, consumers are likely to save hundreds of dollars per year on their bills across all energy consumption (including gas and transport fuels).

Under BCG's preferred decarbonisation pathway, *Smart System Evolution*, the 2020s will be a critical decade for the electricity sector and Aotearoa's transition to net zero carbon. By 2030, this pathway saves $1.9 billion in total system costs, and reduces average annual household bills by $70. With decisive, early action supported by the right policy, regulatory, and market settings, the process of electrification can reduce Aotearoa's emissions by 8.7MtCO_2 per year by 2030 with further reductions to 22.2MtCO_2 per year by 2050. BCG's preferred pathway, ensures emissions reductions at the lowest total system cost, the most affordable household energy bills, and reliable electricity supply.[5]

Enable a smart electricity system

It is proposed that the Energy Strategy should enable the 'smart system' to maximise the use of existing infrastructure, to minimise future infrastructure investment, reducing whole-of-system costs and delivering better consumer outcomes.

The potential value that can be unlocked by enabling a smart electricity system is significant. As MBIE cite, BCG suggests that *a 'smart system' could save around $10 billion in costs on a net present value basis to 2050, and investment in smart technologies could unlock at least 2 GW of distributed flexibility by 2030, and 5.8 GW by 2050.*[6]

The capability to fully unlock the smart system is still emerging. This means that networks may need to rely on more manual, targeted means of flexibility in the near term. The transition will likely become easier as the cost of technologies like lithium-ion batteries, smart EV chargers, long-duration storage, zero-emissions generation and smart system enablers decline. Access to data, including real-time operational data, is critical, as are the platforms to enable advanced distribution system operation and network capacity management.

In sum, a smart electricity system is expected to minimise future costs to consumers (both investment and operational costs) and improve the ability of the system to adapt to the effects of climate change and build greater resilience.

Encourage the right energy and capacity mix

Recognising the role of appropriate transition fuels and supporting the interconnection between gas, electricity and other fuels in achieving a resilient transition will enable right energy and capacity mix during the transition.

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[4] Sapere, *Total Household Energy Costs NZ* page iii. Available online at https://www.ena.org.nz/resources/electrification-of-nzs-energy-needs/document/1231

[5] BCG report, page 10.

[6] MBIE, *Measures for Transition to an Expanded and Highly Renewable Electricity System*, paragraphs 93

There is a need for new flexible capacity to support increased peak demand and intermittent supply. While batteries and demand response are potential contributors to flexible capacity, the current high capital cost of batteries and lack of widespread smart-system enablers for dynamic demand response may limit the potential of these technologies to meaningfully contribute in the period to 2030.

BCG estimated that a total of 400MW of battery storage, 200MW of gas peakers, and 500MW supply-side capacity, which could be either, would be needed to meet the highest 2030 demand peak.[7] Around 1.3GW of new supply side peaking resources was identified in the pipeline but the significant majority (1.1 GW) was identified as being in the early concept stage[8]. Similar conclusions on the need for additional thermal generation have been found in various analyses by the Climate Change Commission, Transpower's Te Mauri Hiko and the energy scenario work by the Business Energy Council.

As a sector, we care very much about keeping the lights on while maintaining affordability and efficiency. To achieve this at lowest cost to consumers, the option set of fuels should not be unnecessarily constrained, so that all feasible options are kept, especially given heightened risks through the transition.

The parties to this letter would be happy to discuss these points with you.

[7] BCG report page 124, see Exhibit 79.

[8] Ibid page 15.