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Submissions  
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## **SUBMISSION ON FUTURE SECURITY & RESILIENCE**

The Electricity Retailers' Association of New Zealand ('ERANZ') welcomes the opportunity to provide feedback on the Electricity Authority's discussion document 'Future security and resilience: Phase 1 draft report' from November 2021.

ERANZ is the industry association representing companies that sell electricity to kiwi households and businesses. Our members supply over 90 per cent of New Zealand's electricity. We work for a competitive, fair, and sustainable electricity market that benefits consumers.

### **The future security and resilience workstream**

ERANZ supports the Authority's wider work programme focused on catering for the electricity system of the future and specifically welcomes the Authority advancing this workstream. We note that it, in conjunction with other workstreams that are underway, will help prepare New Zealand for the coming transition to predominately renewable electricity. While this discussion document focuses on predominantly on potential future issues that would impact on the operation of the grid (near real time), the identified priorities have important implications for all market participants.

Our members appreciate the Authority's phased approach to this work with open engagement and collaboration at each stage as we work towards a prioritised plan for addressing the relevant challenges and opportunities.

New Zealand's response to climate change is the driving impetus behind this work. ERANZ agrees with the Authority's description of the current context with large increases in electricity consumption as the transport and industrial sectors seek to decarbonise, leading to additional renewable generation coming online at the expense of carbon-intensive thermal generation. It is widely recognised a predominance of renewable generation will lead to technical challenges to maintain a secure, reliable and resilient electricity supply.

### **Distributed energy resources**

The high forecast uptake of distributed energy resources across the New Zealand distribution system is undoubtedly a challenge. Still, more importantly, it is an enormous opportunity if done 'smartly' to solve some of the difficulties identified. As Transpower's draft report highlights, New Zealand has the good fortune to learn from comparable jurisdictions, particularly Australia, as they are already grappling with many of the same issues.

Our members agree with the challenges described in the draft report. There is a risk individual distribution network issues compound upwards to the system operator level. But these risks can be mitigated through real-time communications systems meaning both supply and demand from DER applications are managed by service providers who are delivering a “system strength” benefit to the EDBs and the system operator.

The draft report rates the priority of “visibility and observability of DER” as “medium” over the next 3-7 years. ERANZ recommends reconsidering this priority as “high” due to the importance of establishing fit-for-purpose technology standards before widespread uptake. This will help ensure the required performance and communications capabilities are enabled from the outset to achieve the high expectations we have for DER.

When considering the impact of DER on the transmission system, it should be considered in context alongside large-scale developments that can operate to provide similar benefits. Additional regional infrastructure around New Zealand is already built or being planned including battery storage and large-scale demand response.

Ripple control has long been an important feature of New Zealand’s demand-response flexibility. While it may not always be thought of as DER exactly, it provides the system operator with important options during periods of peak demand. Even as New Zealand seeks to build smart DER capability, it is still important to retain the ripple control feature for hot water for as long as it continues to be cost-effective. Maintaining this feature may require investment from distributors, and the Authority should support them to recover the revenue from doing this, subject to normal market testing for efficiency and effectiveness.

### **Challenges of the changing generation portfolio**

Transpower’s draft report highlights the fact new renewable generation will tend towards variable generation with higher use of inverters. Increasing variable generation requires more demand flex or variable generation to be available if required to provide load balance. Thinking about both generation and demand requirements is important as we seek to make the system more resilient.

South Australia has already witnessed the grid instability brought about by large amounts of inverter based variable generation. This experience reinforces the need for ‘smart’ systems to be incorporated into DER installations, giving greater visibility and control to the system operator. The Authority should think about developing markets for such services to encourage innovation and development.

In order to develop an understanding of how the sector could evolve in the New Zealand context, the Authority should consider allowing trials or research projects to share lessons with the industry.

### **Other opportunities and challenges**

ERANZ agrees with the three additional opportunities and challenges identified in this section by Transpower.

#### **Cyber security**

The nature of additional generation sources, growing DER resources and a proliferation of “smart” devices on the network all means a revolutionary increase in communications between market participants. Such communication, while predominantly secure, does lead to more cyber security issues.

Cyber security issues can present themselves in several different ways – either through malicious attacks or an unfortunate breakdown in IT systems. Either way, a loss of system control due to key elements of the sector being inoperable would have immediate severe impacts on New Zealanders’ wellbeing as well as significant damage to our economy.

When considering comparable sectors, the Reserve Bank of New Zealand (‘RBNZ’) has engaged in a similar assessment of our banking system. In its work the RBNZ stated, “the cyber world has long been recognised as a significant source of operational risk for financial institutions”.

Given this low probability, high impact rating, ERANZ questions whether the cyber security priority of “medium” is appropriate. ERANZ recommends upgrading this priority to “high”.

ERANZ recommends the Authority and Transpower engage, if not already, with the government agencies specialising in cyber security issues. Their expertise will help ensure weaknesses are identified, and appropriate mitigation programmes are developed over the coming years.

### **Coordination of increased connections**

Increased connections, particularly associated with DER, can lead to added cost and complexity if congestion requires transmission network upgrades. For example, a large number of smaller DER installations commissioning at once could cause the system operator issues if they have inadequate visibility of what is happening. Such system instability might require additional ancillary services to be procured by the system operator to manage the risk to the system in the future. However, this comes with a cost to consumers that needs to be balanced against the benefits.

### **Workforce skills and capabilities**

All our members are struggling with the current labour market’s lack of experienced or trained staff suitable for current roles. This problem is only going to get worse across the entire sector as the demands of new technology change roles or increase their technical requirements.

ERANZ agrees with the Transpower priority rating of “high”. The sector will become more complex as a large number of participants enter the market as DER providers, flexibility traders, and more. This will require the system operator to similarly increase their skills to manage and coordinate this increasingly complex system.

Thank you again for undertaking this workstream focused on future security and resilience. We are available to discuss our submission further if required.

Yours sincerely



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