Submission on the Electricity Authority's consultation paper: Future operation of New Zealand's power system

Introduction

Infrastructure New Zealand (INZ) welcomes this opportunity to submit on Electricity Authority's discussion document: *Future operation of New Zealand's power system.*

INZ is New Zealand's membership organisation for the infrastructure sector. We promote best practice in national infrastructure development through research, advocacy, and public and private sector collaboration. Our members come from diverse sectors across New Zealand and include infrastructure service providers, investors, and operators.

While INZ has submitted as the peak infrastructure sector organisation, our members may make their own submissions raising those issues specific to their areas of interest or expertise.

General remarks

We welcome the opportunity to engage with the Electricity Authority on the potential challenges and opportunities you have identified. As you note, this is a starting point for an ongoing discussion on what may be needed for the future operation of the power system.

INZ recognises the importance of an efficient and fair market for New Zealand's power system. As we electrify our transport and industrial processes, the sector will require significant electricity generation and transmission investment not seen in New Zealand in decades.

As the Electricity Authority considers the future operation of the power system, we consider there are several key messages from an infrastructure perspective that it will need to be mindful of:

- **Coordination** is needed to unlock potential and opportunities for more standardisation
- **Resilience** must be front and centre of any future decisions
- There must be a **shift away from 'just in time' delivery**
- We need to focus on the more **effective use of data**
- We need to **overcome first mover disadvantage** across the system
- **Workforce capability and capacity** will have to underpin all change

Response to specific questions

Our key points are outlined in the suggested template – with a focus on questions two, three, seven and nine.

Question	Response
Q2. Do you agree that we have captured the key drivers of change in New Zealand's power system operation? Please give reasons if you do not agree.	We are pleased to see that the Electricity Authority is looking into key drivers of change and the different components that need to be considered when examining the future of New Zealand's power system. INZ supports the definition and categorisation of these key drivers for changes and have provided some key considerations from our perspective below.
Q3. Do you have any feedback on our description of each key driver?	• **Key driver 2:** The changing role of consumers light of technological advancements is an extremely important shift. For example, consumers moving to prosumers where they can actively manage their consumption and produce their own energy, which can be exported back into the grid. In addition, the increased accessibility for demand-side flexibility benefits consumers. However, we do note that when considering the impacts on consumers, it is important to distinguish between residential consumers and major industrial consumers, and the impact these changes have on large scale operations. • **Key driver 3:** The changes in operational technology will mean new technologies need to be integrated into system operations at the transmission and distribution network level. • **Key driver 4:** The changes in information technology will create opportunities to improve the performance and utilisation of energy resources. We expect that this new technology should encourage and promote opportunities for greater efficiency. It is imperative that integration of technology is considered as part of this driver for change so the full advantages can be realised.

	• **Key driver 5:** The increase in climate change and extreme weather events can have devastating effects for customers when the electricity infrastructure is impacted. For example, Vector stated that nearly 26,000 homes and businesses lost power during the Auckland Anniversary weekend floods and media reports suggested that nearly 225,000 lost power during Cyclone Gabrielle in February 2023. The importance of increased resilience and maintenance (both reactive and proactive), and the associated costs of these, need to be considered as part of our power system's future. We discuss this further below. • **Key driver 6:** The electrification of energy system is possibly one of our industry's biggest challenges, as the projects for gross electricity demand is uncertain.
Q7. Do you consider we need an increased level of coordination of network planning, investment, and operations across the New Zealand power system? Please provide reasons for your answer.	**Coordination is needed to unlock potential and opportunities for more standardisation.** As noted in the consultation document, significant transmission and distribution network investment is expected to be required over the coming decades to support the transition to net zero emissions. There needs to be as much coordination as possible between participants across the electricity system to ensure that the right investment is made in the right places. The settings underpinning this investment must promote its financeability to ensure it can be delivered efficiently and in a timely way. INZ considers that stronger co-ordination of investment through standardisation may also improve pipeline certainty. Historic underinvestment in our critical infrastructure is one of our greatest long-term economic challenges. As outlined in INZ's *Position Paper: Pipeline Certainty*, uncertainty around our pipeline makes it challenging for the wider infrastructure sector and energy sector to plan and invest in the resources it needs to address the existing infrastructure deficit. The uncertainty around the infrastructure pipeline creates confusion for industry, limits their ability to invest in labour and capital, and limits the number of potential suppliers for projects.

	Deliberate and considered investment is needed to support the future energy needs, as well as mitigate and manage the increased risks that are associated with climate changes and extreme weather events. Without effective and deliberate coordination, there is a risk that each of the Electricity Distribution Businesses (EDB) will take their own approach – resulting in a heavily fragmented system. INZ expects that a more joined-up approach is likely to support more efficient outcomes for grid and network development, and will result in a healthier sector to support that development. In addition, given the importance of the increased planning, investment, and operations across the New Zealand power system, we advocate for a bipartisan commitment from Parliament to commit a long-term programme of sufficient investment for the future. This will provide a clear, certain, and deliverable pipeline that minimises the influence of political changes or the three-year election cycle on the delivery of core and life-supporting infrastructure. Ensuring that sufficient investment and coordination is made will unlock the future potential of our energy demands without being at-risk of changing political decisions or appetite, which has been seen in other sectors.
Q9. Do you have any further views on whether this is a good time for the Authority to assess future system operation in New Zealand, and whether there are other challenges or opportunities that we have not covered adequately in this paper? Please provide reasons for your answer.	**Resilience must be front and centre of any future decisions**. While we acknowledge that this consultation is about the system's operation, resilience and security of supply continues to need to be at the forefront. If the resilience of the system is not considered at every point, then these issues will continue to exacerbate the Electricity Authority's challenges. Considering the climate impact on our on major infrastructure via large industrial operations is imperative to a resilient Aotearoa. As noted in our recent *Position Paper: Climate Resilient Infrastructure*, recent weather events have exposed the aging nature of our infrastructure, which was originally built to handle more benign weather and fewer 'once-in-a-hundred-years' events. For example, many of the electricity outages are caused by fallen

trees bringing down powerlines. This is particularly prominent during extreme weather events.

INZ also urges the Electricity Authority to push for a proactive risk management approach to our existing infrastructure networks and facilities and new assets or upgrades. There is an opportunity and a need to develop long-term funding plans to improve our infrastructure's resilience.

There must be a shift away from 'just in time' delivery.

We need to shift away from *'just in time'* delivery of network upgrades and grid connection works to effectively enable the renewable energy pipeline to be delivered. The sector can struggle to get firm dates for connection works, which can put strain on the programmes for delivery of new generation projects. The regulatory regime is also not set up to enable the grid to be future proofed with an overbuild in areas to accommodate likely increased generation connection requirements.

We need to overcome first mover disadvantage across the system.

Linked to the above, the current system to deal with new connections or upgrades is not fair and equitable across all the EDBs and Transpower. The first mover can be required to pay the full cost of new connections or upgrades, and there is often no subsequent reimbursement for others joining the connection or utilising the upgrade. Minimising the first mover disadvantage could reduce barriers to development. It may also support the changing system with a move to a more distributed local renewable electricity generation.

We need to focus on the more effective use of data.

We support a more effective data management system and data standardisation that will enable more sophisticated development in the right places. INZ sees a role for the Electricity Authority in leading this and coordinating between the EDBs, and ensuring

	there are no undue barriers to parties securing access to data on appropriate commercial terms. **Workforce capability and capacity will have to underpin all change.** INZ recognises that Transpower is currently addressing workforce capability and capacity needs. However, there is more that the wider sector can do to attract and retain talent, especially given New Zealand's renewable energy targets. This will be particularly important to support large scale growth of, and investment into, the sector.

Conclusion

INZ thanks the Electricity Authority for this opportunity to submit and looks forward to continuing to engage on the broader work programme.

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