

8 April 2022

Northern Energy Group submission to the Electricity Authority

Response to the consultation on *Renewable Energy Zones National Consultation*

Introduction

The Northern Energy Group welcomes the opportunity to provide feedback to Transpower New Zealand Ltd (Transpower) on the consultation paper *Renewable Energy Zones National Consultation* (Consultation Document). Our feedback has been structured in four sections:

1. Our views on the potential benefits of the REZ concept
2. Our commentary on the proposed Guiding Principles for REZs
3. Our suggestions for taking an integrated approach to REZ project development
4. Our response to the consultation questions.

About the Northern Energy Group

The Northern Energy Group (NEG) formed in 2019 around a shared interest in delivering future-ready electricity services to communities and a common belief that consumer voices need to be stronger in industry and government decision-making.

NEG consists of Counties Energy, Northpower, The Lines Company, Top Energy, Waipa Networks and Vector. As networks that are entirely or majority owned by customer trusts, we believe that customers' interests belong at the heart of our energy sector.

We see the sector as being on the brink of significant change and opportunity and are committed to leading a new energy future with the voices and interests of our communities at the centre. Together, nearly 40% of New Zealand's power connections (ICPs) are across our networks.

NEG stand for action that delivers benefits for customers. Our goal as consumer owned entities is to lift consumers up together. NEG members provide a trusted, local perspective that would add significant value to consultation processes. As



Northpower



TOP ENERGY

WAIPA NETWORKS



stakeholders, we would complement (not substitute) local community or iwi voices. NEG has feet on the ground locally and should be a priority stakeholder for REZ engagement.

1. Potential benefits of REZs

We strongly support Renewable Energy Zones (REZs) as a concept that can support decarbonisation, increase system resilience, reduce prices for consumers and several secondary benefits for affected regions

Decarbonisation

REZs would support the achievement of a net-zero carbon economy by unlocking more renewable generation through efficient transmission and distribution development, removing barriers to generation development. Storage could also be integrated in time, to amplify the benefits of co-located generation, particularly given the intermittent nature of solar and wind. The REZ can enable the “rapid expansion of our electricity system that needs to start now” recommended by the Climate Change Commission - at least total cost to consumers.

Resilience

REZs would result in greater diversity of electricity sources and generation locations. Prima facie this is likely to result in an integrated energy system that is more reliable and resilient. Unlocking new solar and wind can play a key role in reducing our reliance on fossil fuels to meet increasing electricity demand. It will also provide additional generation that would reduce the risk of dry winter outages through increased solar and/or wind generation enabled by the REZ framework.

Reduced Prices

REZs would increase the overall supply of electricity and should therefore help ensure efficient and cost-effective energy prices for households. This is especially true as solar and wind generation becomes more economically viable and if REZs are able to leverage both public and private capital.

Secondary economic benefits to regions

REZs have the potential to not only benefit the energy system but to also deliver improved social and economic outcomes. Benefits that expand beyond the energy system include enabling regional economic development and job creation, and broader economic development by providing co-location opportunities for large energy users. Consideration of these benefits could be included in the REZ development process and form part of the economic case.



2. Guiding Principles for REZs

Section 4.1 of the consultation document presents seven principles to guide how “we might go about developing a Renewable Energy Zone, and particularly, in thinking how we navigate the potential challenges that may arise”.

We consider the Guiding Principles require direct comment, as we understand that they will directly influence the development of the REZ framework. Additionally, the project selection criteria and ‘on the ground’ decisions will also reflect the Guiding Principles.

Principle 01

REZs are built to harness and unlock renewable energy resource, storage and efficient network infrastructure to support the long-term decarbonisation and energy needs of Aotearoa, as well as the region hosting the REZ.

There is massive renewable potential waiting to be unlocked and technological improvements continue to make them more economically viable. However, these resources remain constrained by a lack of transmission infrastructure and grid capacity.

We see the REZ concept as a pragmatic way of unlocking distribution and transmission capacity at a reasonable cost, maximising the use of existing assets, and providing a structure for co-ordinated investment in the capacity needed to support new generation. This would support markets to do the heavy lifting of generation deployment, we just need to activate the enabling power of Renewable Energy Zones. This needs to happen quickly and constructively to ensure that the infrastructure efficiencies envisioned by the REZ are indeed leveraged in step with the fast-emerging potential of solar and wind developments. This is particularly true for solar – which, facing less resource consenting barriers than wind, has the potential to move fast in New Zealand.

Recommendation:

Unlocking the potential of our regional resources requires a different approach to new investments which appropriately values the benefit of localised generation to the whole system. This principle should therefore make explicit the inherent value of utilising our regions’ natural resource potential.

Principle 02

REZs are customer driven and are only built where there is clear demand from generation or load developers. This will help to ensure that a REZ is developed in line with the market, decreases the risk of investing significantly in infrastructure that may be underutilised or local consumers having to cover the incremental cost of network investment.

We know distributed energy is well suited to local optimisation of grid and distribution capacity. We believe that the REZ enables optimisation of grid capacity by enabling generation to take advantage of economies of scale through



co-ordinated investment and utilising the potential existing infrastructure (through targeted and co-ordinated asset upgrades). We see this as positive for delivery efficiency and delivery price. It does not make sense to power Northland and Auckland from the deep South Island, when there is an abundance of renewable energy in the upper North Island region and existing assets which can be utilised to get that energy to the load centres.

Locating generation close to demand is also an opportunity to increase the resilience of our system. Traditionally, our energy system's architecture has sought to strategically locate generation close to abundant hydro, thermal and fossil-fuel resources. As fossil fuel generation plants close, new load opportunities emerge (e.g. datacentres) and new generation technologies become economically viable, there are greater opportunities for regions to embrace localised solar and wind investments.

Key point:

Locating generation close to demand can reduce transmission losses and unnecessary transportation costs. As networks who are majority owned by consumers, this is of critical concern to us.

Principle 03

Local consumers will be no worse off as a result of developing a REZ. Our intent is to define a funding model that ensures new generation connections or demands developers cover the cost of the network investments required so that the additional costs associated with a pilot REZ in the Northland region do not fall on local consumers. The funding model needs to align with transmission and distribution pricing regulation.

Consumers should be better off, whether directly through their ownership of consumer owned EDBs, as well as via improved security of supply, reduced electricity prices, or de-carbonisation. It is important that the costs of these generation developments and asset upgrades do not fall on local populations, and we must see a net overall benefit.

The upper North Island will continue to experience high population growth, economic inequality, and diverse geographic challenges. By targeting this region for settings and changes that can enable affordable, resilient and consumer-centred electrification we can offer a blueprint for Aotearoa New Zealand. Northland is an ideal location for a pilot capable of proving up this principle. Networks are community owned, and there is a keen focus from regional stakeholders on fair and equitable cost allocation for communities in Northland.

Recommendation:

We encourage the REZ to increase its ambition for consumers; to improve outcomes for consumers, not just avoid making things worse.

Principle 04



REZs are developed through partnerships and collaboration with local iwi and stakeholders to ensure that regions hosting a REZ receive a net benefit from the development.

We strongly endorse the Climate Change Commission's principles of a just transition, and relationships with iwi are a critical part of this. We urge the REZ to formalise working directly with local iwi to understand what impact policies may have for the wider hapū and community. Through collaboration, there is a better chance of designing solutions that benefit iwi and the wider community.

As an example, The Lines Company are working alongside iwi on an innovative proposal to implement solar energy on two marae, with the surplus power generated shared to 10 nearby iwi member homes. Once proven, a further 15 marae would be added, along with a further 75 homes. Eventually, the concept could be rolled out to enable largescale solar connections.

Iwi are increasingly mobilising to realise the economic potential of their land and asset holdings, however the pace of this transition varies. We consider it appropriate to engage with Iwi as part of this process to understand their aspirations and ensure equitable access to distribution and transmission over time, and renewables are increasingly developed and deployed.

Recommendation:

We support this principle and urge that iwi collaboration and participation be included in the project selection criteria, and fully explored during the pilot stage for Renewable Energy Zones.

Principle 05

REZs deliver net benefits to Aotearoa's electricity system where existing connection processes cannot. For example, by increasing competition in the wholesale market to potentially lower regional electricity prices, increasing diversity or supporting reliability or security of supply.

We see REZ as a way of widening ownership options, and increasing access to capital has the potential to deepen generation markets. Industrial and commercial scale solar can be delivered at a capital value accessible to a much wider group of investors than is the case for traditional hydro, large scale wind and geothermal. We see that as ultimately good for customers.

Key point:

REZs should enable a wider range of generation projects to be realised, thus increasing optionality and deepening competition.

Principle 06

REZ location and REZ participant selection are done via a transparent methodology to ensure potential regions and REZ participants are given the opportunity to build their case, including demonstration of any wider social, economic or environmental costs and benefits to the region.



We support a whole systems approach in assessing the total cost and value of investments to consumers, accounting for impacts across the supply chain. The REZ is an opportunity to implement a whole systems approach to new generation investments. We discuss this further in Section 4.

Recommendation:

We suggest that the methodology clearly includes a holistic, customer-centric approach.

Principle 07

REZs are enabled with minimal changes to the existing electricity regulatory framework. Large changes to the regulatory framework can take a significant amount of time to undertake and can have wide reaching implications to existing connected customers.

The speed we need to deploy renewables and decarbonise the economy does not suit a centrally planned, incremental connection model. We need to enable and release larger blocks of renewable energy faster and the REZ has proven to achieve this overseas.

We note that resource management reforms seek to achieve greater efficiencies for New Zealanders and stronger alignment with the infrastructure build needed for rapid electrification. We support these goals but note that they will take several years to achieve through the reform process. While the REZ is a separate framework and the NEG do not suggest it should delay the reforms in any way (or vice versa), the NEG do support the REZ as an opportunity to accelerate needed investments today.

Key point:

Customers will ultimately pay the price for an inefficient or slow execution path towards decarbonisation, and we therefore suggest that this principle needs to be framed around how customers are affected not about red-tape burden.

3. An integrated approach to project development

NEG support a whole systems approach in assessing the total cost and value of investments to consumers, accounting for impacts across the supply chain.

Currently, the market is siloed and while there are knock-on effects of decisions made in one part of the supply chain to other parts, it is ultimately the consumer that is affected.

An alternative approach would assess investment options in terms of their value or cost across the whole system in an integrated way, including the impact on system balancing, grid transportation, or network capacity.

The difference in value of an investment when it is assessed for one part of the supply chain vs when it accounts for the whole system impacts is demonstrated by the whole energy system cost metric (WESC). The WESC was developed by



Frontier Economics for the UK's Department of Business, Energy and Industrial Strategy (BEIS) to inform their significant transition from fossil fuelled electricity generation to enable their decarbonisation goals, efficiently. Frontier Economics has also prepared something similar for the New Zealand context in their report for Vector: *Whole Electricity System Costs*.¹

By taking into account impacts of generation on the whole system (not just capital and running costs as captured by the levelized cost of energy metric) the WESC reveals that not all generation investments are equal. Some deliver greater benefit to the system – and some higher costs. This reflects:

- the impact that an asset has on system balancing (whether the asset incurs additional cost through volatile output requiring other actions to keep electricity demand in line with supply, or, if it adds value by stabilising this);
- displaced generation (reduced costs of running other generators during the periods that the technology is producing power – just as solar could be deployed to displace fossil fuel peaking solutions); and,
- network impact (the distribution and transmission network reinforcement costs that the technology may avoid or incur).

The difference when accounting for these wider impacts is significant – for example, applying this metric to generation in New Zealand finds that energy generated from utility scale solar adds value of \$51NZD per MWh (as opposed to costing \$74NZD per MWh under the LCOE). This is a difference of \$125 per MWh of energy produced.

This demonstrates the importance of taking a whole systems approach in assessing the value of investments across our energy system to ensure new investments deliver the lowest total cost to consumers. We see the REZ as an opportunity to implement an efficient, whole systems approach to new generation investments – the value of which is illustrated by the WESC.

Adopting this whole systems approach in assessing the cost and value of new investments is similar to the approach of 'integrated resource planning' - which considers the impact of investments across multiple segments of the supply chain. Many of the factors which impact whole-system cost and value are regionally specific (including location of demand and population growth and density; the region's natural resource potential; as well as environmental impacts on resilience).

Recommendation:

The REZ is an opportunity to implement an integrated approach to new generation investments.

¹ <https://www.frontier-economics.com/media/4629/frontier-whole-system-costs-in-nz-stc-250321.pdf>



4. Questions from the consultation document

Submission Questions:	NEG comment
Q1. Do you agree that the first mover disadvantage and high connection costs can be challenges for connecting new renewable generation and/or large electricity loads to the electricity network?	Yes, we believe high connection costs could potentially disincentivise or prevent generators, particularly smaller and renewable generators, from proceeding with a project.
Q2. Do you think the concept of a Renewable Energy Zone could be beneficial in a New Zealand context?	NEG support REZ because it enables decarbonisation, affordability, and resilience. See Section 1 for further detail on what NEG see as the benefits of the REZ concept.
Q3. What region(s) do you think would be suited to Renewable Energy Zones?	NEG support the Northland pilot. This meets the principles of customer-led, plentiful generation resource, and close to load centres. Proving the concept in Northland would enable it to be applied in other regions with strong renewable potential and active development interest.
Q4. What benefits do you think should be considered in the decision-making process for Renewable Energy Zones in New Zealand?	NEG strongly support prioritising benefits to customers, including realisation of iwi aspirations, including promoting energy affordability, among other customer benefits.
Q5. Do you agree with the proposed guiding principles? Are there any that you would change or add?	On balance yes. See Section 2 for detailed response. Recommendations: <ul style="list-style-type: none"> • Principle 3 should be more ambitious by making consumers better off. • Principle 4 should be strengthened by making iwi collaboration or participation a requirement for project selection criteria. • Principle 6 could be improved by making it clear that the methodology includes a holistic, customer-centric approach. • Principle 7 could be improved by ensuring the focus on minimising regulatory burden are linked to customer outcomes.
Q6. Do you agree with the proposed criteria for selecting suitable regions for REZ development? Are there any that you would change or add?	We broadly agree with the proposed criteria for selecting candidate regions for REZ development.
Q 7. Do you agree with using a tender process for committing projects in a REZ? Are there	We agree, in principle, with the use of a tender process for committing projects in a REZ in the first instance.

alternative processes that could be considered?	
Q8. Who should be involved with co-ordinating and undertaking the various steps within a REZ development process?	NEG consider themselves key stakeholders in the development of REZs in NEG members' network distribution areas. NEG has feet on the ground locally. The NEG perspective would complement views of consumers and iwi, who are the priority groups for collaboration and consultation.
Q9. Do you agree with the proposed project criteria? Are there any that you would change or add?	We broadly agree with the proposed project criteria. We recommend including criteria that projects can demonstrate benefits to consumers. Strong stakeholder support, including iwi participation, should also be given due weight.
Q10. Do you agree with the challenges we have identified?	We broadly agree with the challenges identified in this initial consultation. In particular, we agree with the challenges caused by the first-mover disadvantage.
Q11. What are some of the ways to overcome these challenges and who should be involved?	The consultation paper suggests that a third party such as the government underwrite a proposed REZ's capacity not being fully subscribed. The integration of large-scale renewable generation may raise challenges around the timing and level of funding available. We support a potential role for Government to help overcome these gaps. For example, Government under-writing of risks would help to reduce the first-mover disadvantage. See also Section 3 on taking a whole energy system cost approach.
Q12. Do you see any other potential challenges that need to be considered?	See our response to Q11.

