Council Wednesday 23 March 2022 at 10.30am

AGENENTARY SUPPLEMENTARY



Northland Regional Council Supplementary/Tabled Agenda

Meeting to be held remotely on Wednesday 23 March 2022, commencing at 10.30am

Recommendations contained in the council agenda are NOT council decisions. Please refer to council minutes for resolutions.

Item

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2.0A Receipt of Supplementary (Tabled) Items

7.0 NGĀ TAKE (DECISION MAKING MATTERS)

7.9 Renewable Energy Zones.

TITLE: Receipt of Supplementary/Tabled Report: Renewable Energy Zones

From: Victoria Harwood, Pou Tiaki Hapori - GM Community Resilience

Executive summary

A 'placeholder' was included in the council agenda indicating the supplementary information was required before presenting the full report to council.

Northpower and Top Energy presented to the Northland Mayoral Forum and all four Northland councils' workshops during early March, with a request for a joint councils' submission in support of Renewable Energy Zones (REZ) in Northland to be submitted in the Transpower REZ Consultation. The Transpower closing date for submissions is Friday 8 April 2022. To allow for a joint councils' submission to be possible, all four Northland councils have put a joint draft submission through their respective March council meetings. A staff member from each council was nominated to formulate the draft joint submission on Monday 7 March. The draft was completed by Friday 18 March which missed council's agenda publication deadline of 16 March 2022.

Recommendation

That as permitted under section 46A(7) of the Local Government Official Information and Meetings Act 1987 the following tabled/supplementary report be received:

Renewable Energy Zones.

Authorised by Group Manager

Name:	Victoria Harwood
Title:	Pou Tiaki Hapori - GM Community Resilience
Date:	18 March 2022

TITLE: Renewable Energy Zones.

From: Victoria Harwood, Pou Tiaki Hapori - GM Community Resilience

Authorised byVictoria Harwood, Pou Tiaki Hapori - GM Community Resilience, onGroup Manager/s:

Executive summary/Whakarāpopototanga

The purpose of this agenda item is to present the draft joint submission from Northland councils on the Renewable Energy Zones (REZ) consultation conducted by Transpower.

Transpower are currently consulting on REZ in Aotearoa New Zealand and on the opportunity to pilot a REZ in Northland. Representatives from Northland's network operators have presented to various councils' forums across the region, drawing attention to the consultation.

Staff were asked to coordinate a joint submission on behalf of the councils in Northland incorporating elected member feedback to date. A draft submission has been attached to this report for approval. Delegation is also sought to approve any additional feedback received from elected members to finalise the submission from Northland Regional Council.

Recommendation(s)

- 1. That the report 'Renewable Energy Zones.' by Victoria Harwood, Pou Tiaki Hapori GM Community Resilience and dated 10 March 2022, be received.
- 2. That the Draft Joint Submission on Renewable Energy Zones (Attachment B) is approved by council.
- 3. That the council delegates to the Chair the authority to finalise the submission in conjunction with the Far North, Whangarei, and Kaipara district council mayors, to reflect any further elected member feedback.

Options

No.	Option	Advantages	Disadvantages
1	Approve the joint submission and delegation	Allows the submission to be processed and provided to Transpower, demonstrating Northland local government support.	Council will not be part of the joint submission
2	Not approve the submission	Status quo.	This would indicate a lack of local government support for a pilot REZ in Northland and the region will not be able to realise the associated benefits if

	the pilot was not confirmed as suggested.	,
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The staff's recommended option is one – to approve the joint submission and delegation.

Considerations

1. Environmental Impact

This decision supports a future potential REZ pilot project for the region, which will have environmental benefits for the region.

2. Community views

There is community interest in Renewable Energy Zones and the potential for Northland. The councils have taken this into account and included it in the joint submission.

3. Māori impact statement

The Northland network operators have committed to engaging with iwi/hapū as they have done with councils. The fact that any REZ application would still travel through the regulatory RMA process, which offers avenues for input from iwi/hapū, provides a level of comfort.

The draft joint submission recognises the need to work in partnership with hapū and iwi recognising Te Ao Māori principles, to help realise Māori aspirations

4. Financial implications

There are no current financial impacts from providing a joint submission. There may be future opportunities for the Northland Regional Council in relation the Renewable Energy Zones which may have financial implications which could be addressed through the Long-Term Plan.

5. Implementation issues

The Transpower public consultation for submissions on Renewable Energy Zones closes on Friday 8 April 2022.

6. Significance and engagement

In relation to section 79 of the Local Government Act 2002, this decision is considered to be of low significance when assessed against the council's significance and engagement policy because it is part of council's day to day activities. This does not mean that this matter is not of significance to Tangata whenua and/or individual communities, but that council is able to make decisions relating to this matter without undertaking further consultation or engagement.

7. Policy, risk management and legislative compliance

The submission is compliant with the Transpower consultation process and there is no other legislative compliance associated with the decision being made.

Background/Tuhinga

Transpower is consulting on a proposal to introduce REZ in New Zealand, as a way of facilitating new renewable energy generation investment that may otherwise be deterred by network upgrade costs.

The Northland region has been identified as a candidate for New Zealand's first REZ due to its high renewable generation potential, high developer interest and limited existing capacity on the transmission and distribution networks. Transpower, Top Energy and Northpower are seeking feedback on whether there is support for the Northland pilot.

Formal consultation commenced on 28 February 2022 and closes on 8 April 2022. It is being brought to each Northland council's March meeting to meet these timeframes.

What is a REZ?

A REZ is where multiple generators (e.g., solar, geothermal or wind farms) or major electricity users co-locate to share connections to the grid, enabling cost effective investment in electricity infrastructure.

Typically, based on overseas examples from Australia and the United States, a REZ is located in regions that may be abundant in renewable energy resources, but are some distance from transmission infrastructure, or require transmission upgrades to connect new generation. By capitalising on economies of scale and sharing construction costs, generators' cost to connect is reduced, helping to removing barriers to the construction of renewable energy generation projects.

Why Northland?

Northland has been identified as a pilot area because of its significant wind and solar resources, and the strong generation investment interest already in the region, with dozens of applications already received by the three network owners. However, Transpower, Top Energy and Northpower advise that their networks are already at capacity in places, meaning that without network upgrades further generation projects will not be realised.

Incremental network upgrades of existing transmission infrastructure could unlock up to 410MW to 700MW of renewable energy from across Northland. This is in addition to the potential for widespread adoption of rooftop solar across the region.

Benefits to Northland

The Northland consultation document identifies several benefits to Northland from the REZ, including:

- Consumer benefits A REZ could reduce electricity prices through increased local generation, helping reduce energy hardship for consumers in what is currently the highest-cost region of New Zealand. Lower prices could in turn support the establishment of new business and economic activity in the region.
- Stimulating the local economy through investment in construction of new generation and network infrastructure, including job creation and workforce training.
- Ongoing employment opportunities post construction in maintenance and operations.
- Building resilience A Northland REZ would strengthen the region's ability to be a net exporter of electricity.

Benefits to New Zealand

Leveraging Northland's renewable energy resources also has benefits to wider New Zealand by:

 Unlocking the potential for more renewable generation to contribute to New Zealand's 100% renewable electricity target. Increasing the resiliency of the energy system into the upper North Island through a diversified electricity supply into Auckland.

Regulatory context

The REZ concept proposed by Transpower works within existing regulatory frameworks. This means that any projects, whether new transmission assets or new generation projects, would still go through normal consultation, planning and environmental consenting processes under the Resource Management Act (RMA).

Consultation

Northland's network operators have drawn this consultation to the public and key stakeholders' attention throughout the region. They have presented to the Mayoral Forum as well as to Northland's councils various forums. The consultation document on the Northland Pilot is provided at **Attachment 1** and more information is also available on the Transpower website if required. Direction was provided for council staff to coordinate a joint submission to the consultation.

Discussion

Staff from Northland councils have worked together to draft a joint submission based on the key points provided by elected members via the various presentations and discussions. The draft submission is provided at **Attachment 2**.

The draft submission is being reported to the region's March ouncil meetings for approval. Individual councils may have further feedback informing the submission. Therefore, approval is also sought for delegation to the Chair to finalise the submission in conjunction with the mayors from Kaipara District Council, Whangarei District Council, and the Far North District Council.

A high-level summary of the key points in the submission are:

- Supportive of REZs in NZ recognising the social, economic, environmental, resilience and security
 of supply benefits
- Supportive of Northland being the pilot
- Councils will need to assess renewable energy provision being included in future District Plan reviews
- Northland councils look forward to working together with developers and network owners on renewable projects within the regulatory framework
- The strong desire for operators to bear costs and not the community
- Would help achieve the long-term sustainable use of Māori land and can support and strengthen marae and papakainga development
- Working in partnership with hapū and iwi is critical
- Recognising market forces, a hope that any REZ would result in reduced power costs for Northland consumers
- Other factors to take into consideration is the significant climate change and adaptation work by the Northland Councils

Attachments/Ngā tapirihanga

Attachment 1: REZ_Northland Pilot_Consultation Document 🕹 🔛

Attachment 2: Joint Council's Renewable Energy Zones Draft Submission 🕂 🎇

TRANSPOWER Northpower TOP ENERGY® Renewable **Energy Zones** Northland Pilot Concept 2022



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1.0 Purpose of this consultation document

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1.1 We are seeking your feedback

Transpower, Northpower and Top Energy are working together to investigate the potential of a pilot Renewable Energy Zone (REZ) in the Northland region. This investigation is part of Transpower's national consultation programme for REZs in New Zealand.

This consultation document provides an overview of our initial work and seeks your feedback on a Northland pilot REZ.

It should be read alongside Transpower's <u>Renewable</u> <u>Energy Zones National Consultation 2022</u>, which gives further information about, and seeks feedback on, REZs in the wider New Zealand context.

Context

High demand from developers to build more renewable generation to connect to the electricity network currently outstrips available network capacity in the Northland region. Large volumes of renewable generation could be enabled if investment was made in the electricity networks in the region, such as upgrading existing assets.

While we have a preliminary view of the work that could be required, the types of network upgrades and investment needed will depend on the feedback gained during this consultation and any subsequent Expression of Interest (EOI) and Request for Tender (RFT) phases.





Figure 1: Illustration of electricity network infrastructure

Electricity transmission and distribution

In New Zealand, there are two types of electricity networks that play a role in transporting electricity from where it is generated to where it is used.

The transmission network, also known as the national grid, is owned and operated by Transpower. The national grid is a high voltage network (up to 220,000 volts) that transmits electricity over 12,000 kilometres of transmission lines and through 170 substations around New Zealand.

From local substations, distribution companies — like Top Energy and Northpower — bring the power across their networks directly to their customers' property boundaries. Some generation can connect directly and feed electricity into the distribution network.

Figure 2 shows the areas that Top Energy and Northpower service and the high voltage lines owned by Transpower, Top Energy and Northpower.



Figure 2: Transmission and distribution network ownership in Northland

1.2 What is a Renewable Energy Zone?

A Renewable Energy Zone (REZ) is a location of investment at the edges of an interconnected electricity network to enable renewable electricity to power more homes, communities and businesses.

In a REZ, multiple generators or major electricity users agree together to co-locate in an area to enable costeffective investments in electricity infrastructure. The investment cost is recovered from these generators and/or large electricity users and not local consumers.

The purpose of these investments in any one zone can be:

- to bring new renewable generation onto the distribution or the transmission electricity network,
- to help large industrial energy users connect into the distribution or transmission network and electrify their operations or,
- a combination of the above.



Figure 3: Simple Renewable Energy Zone

Other potential models:

'Industrial clusters', where several large geographically clustered electricity users (such as electrified process heat, manufacturing or data centres) connect to the network via a shared connection 'Renewable energy industrial clusters', where electricity users are co-located with renewable generation. This enables the electricity users to take advantage of lower cost electricity due to decreased transmission costs.



1.3 Why are Renewable Energy Zones being considered?

Transpower through its <u>Net Zero Grid Pathways</u> programme, is exploring ways in which it can respond to electricity generation or electricity demand developers that are seeking to connect to the transmission network (or via distribution networks) but are inhibited by the first mover disadvantage (i.e. having to pay for the entire upgrade themselves while others may benefit) or very high connection costs.

These are typically the developers wanting to connect to parts of the transmission network that currently have limited available capacity. Transpower and a number of electricity distribution companies across New Zealand are receiving large volumes of connection enquiries of this nature from developers.

REZs, a model used overseas, have emerged as a potential mechanism to help to enable this generation.

To better understand the characteristics and the broader concept of REZs in New Zealand, please refer to Transpower's consultation document <u>Renewable Energy</u> <u>Zones National Consultation 2022</u>. The national consultation is open until 8 April 2022, and seeks feedback on the following topics:

- Whether there is an appetite for developing REZs in New Zealand
- How regions might be selected for a REZ
- What the process for developing REZs should be and what parties should be involved
- How generation or electricity load projects might be selected to participate in a REZ and the commercial contracts that may be required and
- What potential commercial and/or regulatory challenges might be encountered and how they might be navigated.

For more information see <u>www.transpower.co.nz/REZ</u>.



2.0 Pilot project: Northland

Northland has emerged as a potential region for New Zealand's first pilot REZ. This is due to the high levels of electricity generation developer interest and current or imminent constraints on the fringes of the transmission and distribution networks in the region, but with significant capacity available on the grid backbone from Marsden back to Auckland.

Northland is a region with abundant sun, wind and geothermal resources, where large volumes of new renewable generation could be enabled with incremental network investments, primarily through upgrading existing assets.

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Several generation developers have made enquiries and/or applications to Transpower, Top Energy and Northpower equating to roughly 2GW of new renewable generation, enough to power almost half the North Island during peak electricity use periods, or cater to the energy needs of 375,000 homes¹.

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1. Northland ClimateWEB.pdf (niwa.co.nz)



There are areas in each network that are reaching full capacity with limited ability to connect new generation investment. Transpower, Northpower and Top Energy are considering how the three networks could enable new renewable generation investment in Northland.

The three companies have identified that a REZ could be a potential solution. We have started thinking about the preliminary upgrades that may be required across all networks, including potential commercial dynamics and possible challenges within the transmission and distribution regulatory frameworks.

This consultation paper brings together our thinking on the potential of a Northland pilot REZ. We are seeking feedback from iwi, generation developers, industry, local and central government, local interest groups and communities.

We hope to understand the level of support for a Northland pilot REZ and gain insight into the potential benefits and/or costs to communities at an economic, social, cultural and environmental level. We want to ensure that a REZ would add value to electricity networks across the region.

Your feedback on a Northland pilot REZ is important to us. Together with feedback from the national REZ consultation, it will help guide our next steps including whether we commence an EOI phase for the Northland pilot.

If there is sufficient support, **we plan to seek expressions of interest from generation developers in Q3/4 of 2022.** This process will help to inform the demand for a Northland REZ, and whether to proceed further with a REZ development, as well as the likely location, configuration and the extent of network upgrades and investment required.



2.1 The case for a Northland Renewable Energy Zone

There are many reasons why the Northland region is a strong candidate for a pilot REZ.

High-quality renewable resource to accelerate decarbonisation

Northland has an abundance of wind and solar resource, with most parts of the region receiving about 2000 hours of sunshine per year², and strong wind sites along the west coast. If generation developers in Northland were able to supply 1.5GW of new renewable generation, the region would have the potential to supply 5-10% of New Zealand's electricity through renewables. This could contribute towards the 100% renewable electricity target.

Transpower's Net Zero Grid Pathways Generation

<u>Consultation</u> identified the potential for 600MW of grid scale solar generation and 900MW of wind generation across the Northland region. This is on top of the potential for widescale adoption of embedded rooftop solar, which can take advantage of Northland's sunlight hours (Figure 6).



Figure 6: Estimated grid scale wind and solar resource availability

Source: Transpower NZGP generation consultation

2. Northland ClimateWEB.pdf (niwa.co.nz)



High demand from generation developers

Enquiries from developers to Transpower, Northpower and Top Energy are roughly equivalent to 20 times the existing spare capacity on the local networks.

These constraints create a barrier to investment in renewable generation.

Figure 7 shows the aggregated volume of generation enquiries received by Transpower, Northpower and Top Energy across the Northland region. At this stage, this represents close to 2GW of potential new generation across over 30 projects, predominantly made up of wind and solar developments. We have included all enquiries in these numbers, from early enquiries and investigations that may not eventuate, to well-developed projects that have progressed to detailed engineering studies and are likely to result in new renewable generation.

Transmission backbone capacity

The existing 220kV grid backbone interconnection lines from Auckland to Marsden, which form part of the transmission backbone, are significantly underutilised (Figure 7).

The lines can export around 300MW of electricity even during times of interruption and asset outages and potentially a further approximately 600MW of electricity when all transmission assets are fully in service south to Auckland. This is enough to power between approximately 56,000 – 160,000 households. A Northland REZ could enable new renewable generation in the region and utilise existing capacity in the transmission network to get that energy to where it is needed. It would also strengthen the region's ability to be a net exporter of electricity. Additional generation in Northland would provide additional resilience of supply into Auckland.



Figure 7: Generation interest in Northland region and lines reaching capacity limit

Source: Transpower, Northpower and Top Energy

Network capacity limits

Between the transmission backbone and locations with strong levels of renewable resource, there are areas in each network that are reaching full capacity and have limited ability to connect new generation investment. This is shown in Figure 7.

For example, Northpower's western region from Dargaville to Maungatapere is fully committed to planned projects but has significant potential for further wind and solar generation.

Similarly, Transpower's line from Maungatapere to Kaikohe is fully committed in terms of available capacity.

Likewise, Top Energy's network from Kaikohe to Kaitaia is fully committed and there are enquiries for a further 300MW of solar and two significant wind farms on the northern west coast around Kaitaia.

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Renewable Energy Zones Northland Pilot Concept

Transpower New Zealand Limited

Existing network export capacity

The network as it is can export up to 325MW of electricity, if the distribution of generator connections is weighted more towards the 220 kV connections at Bream Bay and there are limited number of connections in the Far North and at Dargaville.



Incremental upgrades

New generation capacity could be possible with incremental network investments, primarily through upgrading existing assets. This could be a cost efficient way of unlocking substantial new renewable electricity.

Figure 8: Illustration of existing network export capacity





2.2 Potential benefits to Northland

A Northland pilot REZ could substantially benefit local communities in the following ways.

- Stimulating the local economy through investment in construction of new generation and network infrastructure, including job creation and workforce training.
- Ongoing employment opportunities post construction in maintenance and operations.
- Potentially lowering regional electricity prices through a combination of reduced transmission losses and lower wholesale electricity costs. This will benefit existing industrial customers and could be the catalyst to attract new industrial energy users, driving economic growth and job creation.
- Seeking to reduce energy hardship Northland has the highest delivered electricity cost of all regions in New Zealand. The REZ will lead in part to reducing the cost of electricity for those in Northland who live in areas with high socio-economic deprivation and high residential electricity prices.

More work is required to better understand the nature of these benefits and how they could be realised through a Northland REZ, including further engagement with central and regional stakeholders.

Questions

Q1.

Do you support the development of a pilot REZ in Northland? Please provide your reasons as to why or why not.

Q2.

What potential benefits of a REZ are important to you? Consider economic, social, cultural and environmental factors.

Q3.

What potential costs of a REZ are important to you? Consider economic, social, cultural and environmental factors.



2.3 Potential generation enabled and network upgrades

A range of scenarios to enable a Northland REZ are possible. Depending on consultation feedback, more detailed scenarios will be made available in the EOI phase, including potential incremental network upgrade combinations to enable renewable generation.

Based on the current volume of generation enquiries, the EOI scenarios could range from 410 MW to 700 MW of renewable generation enabled, with high-level investments ranging from \$0.05M/MW to \$0.56M/MW (based on estimated upgrade costs ranging from approximately \$20-\$400 million.)

Your feedback will help shape our thinking and guide the EOI phase including informing the likely network upgrades and investments, and their associated costs. Ultimately, the network upgrades and investments required for a Northland pilot REZ will be determined by the location and size of committed renewable generation developments in the Northland region.

Transpower, Northpower and Top Energy have looked into the current state of the combined networks to build a preliminary view of the range of asset upgrades and investments that may be required.

At a high level, these upgrades and investments would ensure that we make the most of our existing assets to enable a significant volume of new generation in the Northland region. This approach would also be more efficient than if we built new lines and substations. These may be required if there is significant new generation coming on stream, but it is generally more cost effective to first enhance or upgrade existing assets within the distribution and transmission networks.

At this stage we have only considered the Transpower, Northpower and Top Energy shared lines, substations and other equipment that would likely be used in a Northland pilot REZ.

Figure 9 shows a preliminary view of the range of network upgrades that may be required and could be considered basic building blocks for a Northland pilot REZ. We have not considered individual connections from potential generation plants to network connection points, which are highly variable and will be identified once firm locations of generation development are understood.





Table 1 sets out the various investments that may be required as highlighted in Figure 9. These potential projects would be funded in two ways – projects A to E would be commonly funded via a REZ, and projects F-I are interconnection projects, which would be funded via the standard regulatory investment process and recovered from customers via the Transmission Pricing Methodology.

Other network investments may be required depending on the location of new generation interest received during this consultation and the subsequent EOI phase. For example, new network build options could include a line to form a loop from Dargaville to Kaiwaka or Maungaturoto via Ruawai/Poutu.

There is also the potential to include storage technologies, such as a grid-scale battery, which could further change the network investments required.

Table 1: Potential network upgrades

Potential project		Description			
REZ	REZ funded projects				
A	Runback scheme on 110kV Kaikohe- Maungatapere circuit	Runback scheme to increase the loading limit with all circuits in service on Kaikohe to Maungatapere circuits.			
B	Tactical Thermal Upgrade on 110kV Kaikohe-Maungatapere circuit	If feasible, increase line rating by increasing the operating temperature of Kaikohe to Maungatapere circuits.			
С	Reconductor 110kV Kaikohe- Maungatapere circuit	IIf feasible, increase line rating by reconductoring Kaikohe Maungatapere circuits.			
D	Complete second Kaitaia-Kaikohe 110kV circuit	Complete the ring along the east coast from Wiroa to Kaitaia. This increases the ability to transfer power from Kaitaia to Kaikohe, allowing for increased generation north of Kaitaia.			
E	Upgrade Dargaville-Maungatapere circuit to 110kV	Increase the transfer capacity by upgrading the existing Dargaville- Maungatapere circuits to 110kV.			
Inter	connected investments				
F	Reconductor 110kV Henderson- Maungatapere circuits	If feasible, increase line rating by reconductoring Henderson- Maungatapere circuits.			
G	Marsden ICT upgrade	Increase ICT capacity between 220kV and 110kV, upgrading the Marsden ICTs.			
•	Marsden ICT upgrade, and split 110kV Henderson-Maungatapere circuits	Increase ICT capacity between 220kV and 110kV, split the 110kV network between Henderson and Maungatapere to remove the possibility of the 110kV circuits constraining the network.			
0	220kV Bream Bay-Huapai upgrade	Duplex Bream Bay-Huapai circuit.			
		Remove the branch limit on Huapai-Marsden.			
		Remove the branch limit on Bream Bay-Marsden.			

Note: These upgrades are focussed on unlocking thermal capacity, and do not cover voltage or stability issues which may need to be addressed in the development of a REZ.

2.4 Investment and consenting considerations

In Transpower's national consultation document <u>Renewable</u> <u>Energy Zones National Consultation 2022</u>, potential processes for both investment decisions and cost recovery are outlined. Section 4.0 overviews a potential process to determine network and generation investments that would make up a REZ.

Section 5.0 of the national consultation document then outlines how costs might be recovered for the network investment from REZ participants. Transpower, Northpower and Top Energy's intent is to define a funding model that ensures new generation connections or demand developers cover the cost of the network investments. This funding model would seek to ensure that the additional costs associated with a Northland pilot REZ do not fall on local consumers.

It is important to note that the upgrades to transmission connection or distribution assets would be recovered from generation developers as incremental costs (projects A-E). Upgrades to transmission interconnection assets would be recovered via charges according to the Transmission Pricing Methodology (projects F-I).

Another important consideration is that any generation development enabled by a REZ would need to follow resource consenting and land acquisition processes. This also applies to any upgrades of existing network assets. These processes are discussed in Section 5.3 of the national consultation document.

Questions

Q4.

Do you support enabling developments through upgrades to existing lines and substations as demand for connections to the networks emerge? If not, what alternatives would you propose?

Q5.

If new lines needed to be built to connect resources, where should they be constructed/not constructed?

Q6.

Are there alternative proposals that you think we should consider?

Q7.

Do you have development projects that a REZ might assist you to construct and connect?



3.0 Have your say

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Renewable Energy Zones Northland Pilot Concept

Transpower, Northpower and Top Energy are seeking feedback on the concept of developing a Northland pilot REZ. You are also invited to respond to Transpower's consultation document *Renewable Energy Zones National Consultation 2022*, which seeks feedback on the concept of REZs in the New Zealand context.

Your feedback will help guide Transpower, Northpower and Top Energy on the next steps and whether to proceed with an EOI from generation developers in Q3/4 of 2022 for a Northland pilot. This process will help to inform demand, possible size and location for a pilot REZ development in the Northland region.

This consultation is open until 5:00pm, Friday 8 April 2022. Submissions can be emailed to <u>rez@transpower.co.nz</u> using the heading "Northland REZ consultation" or submitted via the online form at <u>www.transpower.co.nz/REZ</u>.

Submitters may comment on any relevant aspect of our topic. We have asked some specific questions and would welcome submissions on those questions, but all relevant comments are welcome.

Submissions are made jointly to Transpower, Top Energy, and Northpower and will be posted on Transpower's website. If any aspect of your submission is confidential, please advise us, together with the reasons why you consider it should be considered confidential, and we will not publish that part of the submission.

There are a number of parties with interests in the Renewable Energy Zone concept, including the New Zealand Infrastructure Commission, who have proposed the concept as part of their Infrastructure Strategy, the Ministry of Business, Innovation and Employment in their energy policy role, and electricity sector regulators, the Commerce Commission and Electricity Authority. We are likely to discuss elements of submissions with these parties except where a submitter has asked for confidentiality.

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ons
Are you a developer? Yes No
Would you invest in a Northland REZ if there was an opportunity to?
Have you applied previously to connect to a network in Northland?
Yes No
 What potential benefits of a REZ are important to you? Consider economic, social, cultural and
environmental factors.

 What potential costs of a REZ are important to you? Consider economic, social, cultural and environmental factors.

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Potential generation and network infrastructure 4. Do you support enabling developments through upgrades to existing lines and substations as demand for connections to the networks emerge? If not, what alternatives would you propose?	6. Are there alternative proposals that you think we should consider?
5. If new lines needed to be built to connect resources, where should they be constructed/not constructed?	7. Do you have development projects that a REZ might assist you to construct and connect?
Any further comments	
	Would you like to receive occasional updates on the potential development of Renewable Energy Zones in New Zealand?



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Appendix 2: Glossary

110kV/220kV: 110,000 Volts/220,000 Volts. The high voltage lines are designed to transmit electricity more efficiently over long distances, compared with the 230V seen in residential power.

2GW: A single Gigawatt is equivalent to 1,000,000kW. kW is the unit most household appliances are measured in. 2GW is enough to power almost half of all the electricity required in the North Island during peak demand.

Capacity Factor: A value to represent how frequently a generator generates close to maximum output, defined as the average generation output divided by the maximum power output.

Developers: In this document, developers are parties investing in the construction of renewable energy generation (wind/solar/geothermal) OR constructors of industrial loads that use large amounts of electricity

Distribution Network: Local networks that carry electricity from the transmission network to individual consumers.

Duplex/Duplexing: Upgrading powerlines by replacing single conductors with twin conductors of a similar size. This increases the capacity and allows more power to flow.

First Mover Disadvantage: The disadvantage of the first developer needing to pay for the entirety of the new electrical equipment required. For more information on this concept, refer to Section 2.4 of Transpower's *Renewable Energy Zones National Consultation 2022.*

Grid Backbone: The major lines that form part of the transmission network and connect major regions of load and generation.

ICT: Interconnecting transformer, transformers tying two transmission voltages such as 220kV and 110kV.

Interconnected electricity grid: A collection of electrical assets at a regional scale that are electrically tied together during normal operation.

Network Capacity: The maximum amount of electricity that can be safely carried by a network, or part of a network.

Nobelium: A type of conductor.

Peak Generation: The amount of electricity required at times of highest demand on the network, such as around dinner time when many people are using appliances at the same time.

Runback Scheme: A type of special protection scheme that automatically reduces power flow following an outage, which allows more power to flow with all circuits in service.

Simplex: Single line or conductor.

Tactical Thermal Upgrade: A type of upgrade to the transmission grid that allows more electricity to flow. This is achieved by tightening the powerlines between towers so they can operate at a higher temperature, and the resulting sag in the line stays above minimum ground clearance levels.

Transmission Network: The high voltage network carrying electricity from power stations to local areas.



Council Meeting 23 March 2022



TRANSPOWER



[submission on behalf of Northland Councils]

Northland Renewable Energy Zones Northland Pilot concept DRAFT

Thank you for this opportunity to submit on the Northland Renewable Energy Zone (REZ) pilot consultation.

Your consultation asks whether renewable energy zones are right for Northland. Our submission on behalf of all Northland Councils supports the concept, noting the social, economic and environmental benefits we believe it will bring to the region.

It is an unfortunate distinction that Northland is known as one of the more deprived regions in the country, with some of the highest electricity costs. We are working collectively in many areas to address disparities in our communities, and to encourage growth and well-being. We are united in our objective to see Northland thrive. The region's rich renewable energy resources (including solar, wind, geothermal, biomass and wave and tidal environments) offer real opportunities to achieve cultural, community and economic benefit, whilst also protecting environmental outcomes and ensuring community resilience.

It is these aspects that we have considered in our submission, focusing on the long term benefits to Northland, as well as New Zealand. However, with any long-term infrastructure investment it is important to get the foundations right. This is key to ensuring that the investment realises its benefit to communities and the environment.

We consider it critical that local communities do not fund the substantial investment required to increase the capacity of networks, and support local renewable energy. Rather, these costs should be borne collectively by those seeking to connect renewable energy projects to the network, and those benefitting from that generation.

The development of renewables could have strong flow on benefits for our communities, with more affordable energy through increased competition on the electricity wholesale market, along with employment opportunities through construction and ongoing maintenance. Northland needs more of these opportunities to enable it to thrive.

Being energy self-sufficient will also assist in achieving the long-term sustainable use of Māori land and can support and strengthen marae and papakainga development. Undertaken properly, renewable energy zones could support regenerative environmental outcomes, as articulated by tangata whenua within iwi and hapū environmental plans, providing for the aspirations of iwi and hapū to be realised on their whenua. Working in partnership with hapū and iwi to embrace Te Ao Māori in any pilot, and beyond, will be critical to realising these aspirations.

With access to more diverse sources of renewable generation, a Northland REZ would improve the security and resilience of the local electricity supply and would allow for any excess generation to be exported to Auckland, meaning benefits would go beyond the local boundaries of the Northland REZ.

We support the underpinning environmental value that a REZ provides in helping our community and New Zealand meet decarbonisation targets. This is a challenge that we collectively support for the long-term prosperity of our region and New Zealand. All four Northland councils alongside Tangata whenua have already developed a draft Climate Adaptation Strategy, endorsed by our Joint Climate Change Adaptation Standing Committee. Renewable energy zones support several priority actions identified in the strategy including inter-council collaboration, national and regional partnerships, infrastructure resilience, planning and community adaptation. Northland's councils look forward to working with developers and network owners on renewable projects as we build towards a sustainable renewable energy future for our region. We acknowledge the commitment of network owners to continue to meet core regulatory outcomes, including the need to:

- protect and where necessary restore the natural environment
- better enable development within biophysical limits, including supply of housing, affordability choice, and timely provision of appropriate infrastructure
- give effect to the principles of Te Tiriti o Waitangi
- prepare for adapting to climate change and mitigate contributing emissions
- improve system efficiency and effectiveness while retaining local inputs

The REZ initiative would allow for the region to respond to these outcomes, whilst benefitting the social and economic wellbeing of our communities

Northland REZ consultation questions

Q1. Do you support the development of a pilot REZ in Northland? Please provide your reasons as to why or why not.

We are supportive of a Northland REZ pilot that focusses on unlocking the renewable energy resources in Te Tai Tokerau. Rich in solar and wind resource, Northland significant potential for renewable energy, which is currently largely untapped.

The councils of Te Tai Tokerau support the goal of a decarbonised New Zealand, and a thriving netzero emissions society by 2050. To address the challenges of climate change, we are focused on building a resilient Northland. Mechanisms to unlock the renewable generation in our region will be essential to enable community wide decarbonisation, affordability of energy and resilience of our community.

We support the REZ concept as an opportunity to reduce prices for consumers by meeting local demand for electricity locally, thereby reducing transmission losses and lowering wholesale electricity costs. Lower energy prices are an important input into developing new industries in Northland and stimulating economic growth.

Unfortunately, Northland is a region that has seen the departure of several major industries. Northland councils are supportive of settings that help drive economic stimulus, provide employment opportunities and have a net positive benefit on our region environmentally, socially and culturally.

It will be important in the design of any REZ that the resulting costs are not borne by our community, and that it produces an overall net benefit. The proposal to focus on first upgrading existing infrastructure to improve utilisation and efficiency is therefore supported.

We are pleased to see that the consultation paper acknowledges that community and tangata whenua consultation is essential. We recommend robust and meaningful consultation with owners of whenua Māori, marae, hapū and iwi. As with any new projects, community consultation and acceptance are key.

As such we support ongoing dialogue with the Northland community on the development of sites for future renewable generation, and for new transmission assets required to unlock that generation.

Q2. What potential benefits of a REZ are important to you? Consider economic, social, cultural and environmental factors.

We recognise that increased local generation introduces more competition into the electricity wholesale market, reducing wholesale prices. Lower energy costs prices will have a direct positive impact on community well-being. This may in turn stimulate new businesses, bringing further employment opportunities and supporting economic growth.

Investment into generation and network infrastructure will provide benefits to the local economy through job creation and work force training, as well as creating employment opportunities in infrastructure maintenance and operations. Local economic development is critical for our region, and infrastructure investment has a role to play in attracting industry, supporting jobs and skills development.

We understand that tangata whenua have strong aspirations for their ancestral whenua with increasing settlement on whenua Māori, often in relatively isolated areas. Ensuring a secure energy supply to these areas is vital. Renewable energy creates the potential for electricity generation to be located close to this demand and will be key to supporting resilience on whenua Māori, and for communities in a changing climate. Indeed, renewable energy generation is already an approach adopted by several papakainga and marae in Te Tai Tokerau.

We see Renewable Energy Zones as an important tool in helping to meet the Government's target of 100% renewable energy by 2030, and the climate change commitments of Councils in Te Tai Tokerau.

The environmental benefits of reduced carbon emissions from non-renewable generation must also be considered

Q3. What potential costs of a REZ are important to you? Consider economic, social, cultural and environmental factors

It is important that our community, businesses and organisations do not bear the cost of new infrastructure required to support renewable generation.

Northland has some of the highest deprivation factors in New Zealand including the highest unemployment rate, and the highest dependency on benefits. With household incomes increasing at a slower rate than the national average the development of a REZ cannot add additional costs to our communities.

Environmental costs are an important consideration. The whole of life cost (or the life cycle) of upgrades and new asset construction must form part of the decision-making process. We acknowledge and support any works or projects going through normal consenting regimes, with requirements to mitigate adverse impacts, including adverse impacts on landscape.

We are therefore supportive of the focus on staged/targeted upgrades of existing assets, that are less intrusive on the natural and built environment.

Q4. Do you support enabling developments through upgrades to existing lines and substations as demand for connections to the networks emerge? If not, what alternatives would you propose?

In principle, we support efficient utilisation and maximising the potential of existing assets, noting that building new assets can be more disruptive on the environment. The proposal to focus on incremental upgrades to existing infrastructure is a sensible short to medium term solution. At

present there are an increasing number of proposals, especially solar power projects, that would benefit from focus on the capacity of existing assets, and localised connections.

We understand that in the longer-term, new assets may be required to connect the generation from existing transmission assets, and that these projects would go through the usual consenting regime. Community, hapū and iwi consultation will be critical at that stage.

Q5. *If new lines needed to be built to connect resources, where should they be constructed/not* constructed?

All proposals should take care to minimise adverse effects on areas with historical, cultural, environmental values. Siting and design of proposals in the region's more sensitive coastal environment should be treated with additional consideration and care.