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7 November 2023

Consultation: Advancing New Zealand's energy transition
Energy Resources Markets
Ministry of Business, Innovation and Employment
PO Box 1473, Wellington 6140

By email: energystrategy@mbie.govt.nz

Transpower's submission to the MBIE consultation – Advancing New Zealand's energy transition

Transpower welcomes the opportunity to respond to the Ministry of Business, Innovation and Employment (MBIE) *Advancing New Zealand's Energy Transition* consultation package. The package demonstrates the interdependencies between the many work programmes of the regulatory and policy agencies impacting investment in, and operation of, the energy sector.

The energy transition consultation comes at a time when we need an urgent response to climate change. If Aotearoa New Zealand is to meet its emission reduction targets by 2030 and 2050, then the electricity sector will need to produce and transmit ~70% more renewable electricity than it does now. This amount is largely accepted as the base case, with further opportunities to electrify hard-to-abate sectors such as aviation or using e-fuels. The sector needs to accelerate production and transmission and keep it up for decades.

In doing so, however, we need to ensure the electricity market and the power system delivers reliable, low-cost electricity. If consumers across the economy do not have confidence that electricity supply will be consistently affordable and reliable, they will not transition away from other sources of energy – and the opportunity to decarbonise our economy in the least-cost manner will be lost.

This transition requires considerable urgency in ensuring we have our policy and regulatory settings right – to ensure the market is well-placed to respond to the challenge through efficient wholesale market design that incentivises the right amount and mix of generation capacity; that regulated network businesses can invest in a way that balances affordability with the need to build ahead of demand; and industry regulators have the right roles and responsibilities and are sufficiently well funded to progress reform at pace. The interdependencies across portfolios need to be recognised and addressed with a particular focus on the importance of the consenting and property rights regime for the energy transition.

MBIE's suite of consultation papers captures most of these issues and provides a thorough discussion of what might need to be considered to address them. The only exception is on the issue

of property rights for new¹ infrastructure which must be more thoroughly considered. Transpower has provided a summary of the priority areas for attention as well as more detailed submissions in response to each paper. In addition to this overarching submission, Transpower provides separate submissions in relation to:

- Gas Transition Plan issues paper;
- Interim Hydrogen Roadmap;
- Developing a regulatory framework for offshore renewable energy;
- Measures for transition to an expanded and highly renewable system.

We would be happy to meet to discuss our submissions in more detail. Please contact Tyler Byer, Senior Strategy Analyst, at [REDACTED].

Summary of position on the consultation package

The most important regulatory developments to advance New Zealand's energy transition are:

- The Commerce Commission and Electricity Authority should have explicit requirements related to climate change considerations in their regulatory mandates.
- The transmission investment test in the Capex Input Methodology (IM) is likely to be too restrictive for the anticipatory investment required to enable the transition. Notwithstanding any changes the Commerce Commission makes to the Transpower Capex IM as part of the IMs review in December this year, we consider that more regular amendments will be required to support the transition.
- Managing the fossil fuel transition risk will require sufficient flexible supply and demand-side resources to be available to reliably and efficiently balance the power system in real time as we move to a more renewable electricity system. Maintaining this balance will be critical to build confidence in electrification as the best way to decarbonise the economy. There are live issues that must be addressed with a sense of urgency. Many solutions have already been developed and we now need regulatory action to implement changes at pace.
- For offshore wind, a combined Transpower- and developer-led model would provide for the coordinated development of transmission infrastructure. Transpower's onshore role should be extended offshore for consistency and to maintain a stable, reliable grid while allowing for optimised planning solutions.
- Changes are required to environmental and property legislation, to ensure renewable generation and associated transmission can be developed at pace. Policy barriers in, and time delays created by, the Resource Management Act (RMA) and, and its national direction, and broader environmental legislation must be removed to enable both onshore and offshore development. In relation to the allocation of property rights, the Public Works Act and/or Electricity Act must contain quicker processes, such as moving from an authorisation regime to a compensation regime, as occurs in other jurisdictions.

¹ And upgraded infrastructure, where the upgrade goes beyond our existing rights.

Ensuring industry regulators give weight to climate change

Transpower agrees with MBIE that a whole-of-system approach will be needed to successfully meet the challenges of an energy transition to a low emissions economy. We consider the consultation package effectively demonstrates the interdependencies between the work programmes of the Commerce Commission, Electricity Authority and Gas Industry Company, and the importance of policy alignment. The role of the Climate Change Commission in providing apolitical, cross-economy coordination and direction to inform the work of other regulatory bodies, is also clear.

Each regulator’s interpretation of its individual form of “efficient operation” for the “long-term benefit of consumers” statutory objective will affect how it operates to support climate change policies. For example, the Electricity Authority’s interpretation of its statutory objective is that:

“efficient operation of the electricity industry is interpreted within the context of other legislation and regulation affecting the electricity industry, and in particular does not allow consideration of pan-industry externalities such as carbon emissions.”²

Options must be considered to better align industry regulation with broader climate policies, without compromising the independence of industry regulators. In particular, both the Electricity Authority and Commerce Commission should have explicit requirements related to climate change in their mandates and reflected in legislation and their respective regulatory instruments. Legislative options could require industry regulators to “give effect to” or “have particular regard to” Government Policy Statements (GPS) in relation to climate change.³ A GPS could in turn clarify that applying statutory objectives for “efficient operation” includes consideration of environmental and climate effects,⁴ and requires industry regulators to promote and support environmental and climate change outcomes.⁵

The transmission investment test needs to enable anticipatory investment

The Commerce Commission is currently considering our proposal for a multi-stage project to invest in ensuring the core backbone of our transmission grid is ready to enable the energy transition over the coming decades – our Net Zero Grid Pathways (NZGP) programme. We expect the Commerce Commission’s final decisions on stage one of our NZGP investment in early 2024.

The NZGP process has highlighted that the transmission investment test (in the Capex IM) does not appear to deal well with anticipatory investment to support an optimal transition path. This is because the uncertainties associated with the transition mean it is difficult to select a single ‘best’ investment option that maximises net electricity market benefits. However, options that may not currently be estimated to provide the highest net benefit may deliver better optionality as the transition evolves.

We have submitted to the Commerce Commission’s Input Methodologies (IMs) review on changes, including to the transmission investment test, that would better support anticipatory network investments to be made in alignment with the government’s sustainability objectives and

² [Interpretation of the Authority's statutory objective 2011 - WITH December 2022 EXPLANATORY NOTE](#), at 2.4.1(b)

³ Adopting precedent from existing legislation including the Resource Management Act (RMA), the Water Services Entities Act and/or the Spatial Planning Act.

⁴ In the same way as they consider any other costs and benefits.

⁵ For example, following s 54Q Commerce Act precedent.

commitments.⁶ The Commerce Commission’s final decisions on the IMs (including the Capex IM) will be made in December this year.

The outcome of the NZGP process and the final decisions on the IMs will provide a better understanding of whether existing barriers remain and whether there are further barriers in the regulatory framework. However, amendments will continue to be needed to the IMs in the coming years as the transition accelerates and we learn from experience. We expect to work with the Commerce Commission on approaches to doing so with more agility than can be achieved with the statutory 7-year review cycle of the IMs.

A significant change to the transmission investment test would be to allow the Commission to incorporate benefits outside of the electricity market. While decarbonisation and the drive to electrify should be reflected in demand scenarios, investments to support decarbonisation are likely to generate benefits outside of the electricity market. For example, from overseas experience, a Renewable Energy Zones (REZ) model can accelerate the connection of renewables by coordinating transmission, distribution, and generation investment, and supporting connections of new energy intensive industries. Development of REZs requires policy changes to give effect to the benefits of co-ordinated planning. While internationally REZ models have been successful for the market they operate in, a REZ model for New Zealand must be fit for purpose.

There are some aspects of the transition, like the REZ opportunity, that could be supported by a coordinating entity. As MBIE notes, a coordinator/planner role has been created in other jurisdictions to support their transitions. Transpower is well placed to perform this role.

Managing fossil fuel transition risk

Aotearoa New Zealand’s electricity system faces both peak and energy demand challenges.⁷ Winter-peak demand is increasing, and there is an increasingly tight supply-demand balance to meet current energy needs. As peak demand grows, additional capacity is needed to meet it, and as the contribution from intermittent generation grows so does the need for other resources to maintain supply when there is no wind or sunshine. Investment in flexible capacity and resources has not kept pace with demand, a situation that became clear during the last two winters. The tightness of supply-side capacity to meet demand also means it has become increasingly difficult for Transpower and generators to take the planned maintenance outages that are essential to the longer-term reliability of the electricity system.

We have been fortunate to have healthy levels of rainfall and hydro storage during the last two winters to offset constraints on thermal generation availability, including material unplanned outages in winter 2023 at Huntly and Stratford power stations. Had these coincided with drier conditions the outcome for households, businesses, and communities could have been very different. Unplanned outages and retirements of existing ageing thermal plant heightens the risk to security of supply.

These are live issues that must be dealt with now and cannot be left for some-time in the future. While there are sufficient consented projects in the generation pipeline, not all the currently consented renewable projects are committed. If the expected new generation does not come online

⁶ e.g. Transpower is advocating for a proportionate major capex project (MCP) consultation process commensurate with investment need, type and likely options, and for additional uncertainty mechanisms for resilience expenditure and connection assets.

⁷ The energy challenge is having enough energy to supply to customers over the winter months when fuel from rainfall, the wind and the sun are typically in shorter supply (typically measured in kWh or MWh). The peak demand challenge is having enough capacity available to respond reliably and quickly when demand in aggregate across the motu peaks, which typically occurs on a cold, still and dark winter’s evening (measured in kW or MW).

before the decommissioning of existing thermal generation, or sufficient investment in firming is undertaken, then the supply margins may not be sufficient to meet demand from 2025 – particularly to meet the peak demand challenge in having enough fast starting generation, or other options, to cover a cold night during the winter peak period.⁸ Additional flexible resources such as batteries, demand response and gas-fired peaking generation would help address this peaking issue. Gas-fired generation will help to address not only the peaking issue but, also in part, the winter energy issue in a dry year.

Transpower is supportive of the continued implementation of the Electricity Authority’s winter initiatives, and the future security and resilience (FSR) project. Given the importance and urgency of all these initiatives and solutions to the successful transition of the power system, we are concerned that they are not better prioritised, adequately funded, or resourced. Solutions are largely known. It is now time to implement changes.

We also support the development of market-based incentives. However, these incentives will need to be supported with appropriate regulatory and market development settings. For example, adequate performance obligations on asset owners to ensure secure operation of the power system,⁹ reducing uncertainty to the market on expected plant availability,¹⁰ tools and information, and additional monitoring and requirements to encourage more demand-side participation bids into the electricity market.¹¹

Co-ordination of offshore wind developments can deliver efficient outcomes

Offshore wind has the potential to assist in renewable generation at a pace required for the transition. From our study of international offshore wind development, a combined Transpower- and developer-led model is best for the development of the associated offshore transmission infrastructure. Further, Transpower’s onshore role should be extended offshore for consistency and to maintain a stable, reliable grid while allowing for optimised planning solutions.

Transpower is supportive of a fit-for-purpose regulatory framework being developed for offshore wind. We will continue to work closely with regulators, developers and the offshore wind industry to develop the regulatory and policy settings.

Changes to other legislation and national direction are required to support rapid expansion of renewable electricity

Changes to both environmental and property rights legislation is required, to enable the energy transition. Transpower agrees with MBIE that existing RMA national direction for renewable electricity generation and electricity transmission is no longer appropriate to achieve the pace of change required.¹² Transpower agrees the current national direction can lead to consenting processes (for both existing and new assets) that are complex, lengthy, costly, uncertain and litigious.¹³

⁸ See [Transpower, Security of Supply Assessment 2023, 26 June 2023](#)

⁹ As currently being considered through the Electricity Authority’s review of Part 8 of the Electricity Industry Participation Code.

¹⁰ Such as improved information plant outage and greater visibility on potential retirement as considered through the Electricity Authority’s FSR programme Orderly thermal transition paper).

¹¹ As outlined by the Market Development Advisory Group’s Demand Side Flexibility options.

¹² Strengthening National Direction on Renewable Electricity Generation and Electricity Transmission, Consultation Document, April 2023, Message from Ministers.

¹³ Strengthening National Direction on Renewable Electricity Generation and Electricity Transmission, Consultation Document, April 2023, Page 5.

If Aotearoa New Zealand is going to meet its emission reduction targets, the environmental authorisation of renewable electricity generation activities, and electricity transmission activities, needs to be more certain and more permissive. The regime needs to enable approvals to be obtained quickly – but also ahead of need. The regime must recognise the differences between generation and transmission assets – and between greenfield assets and routine works on existing assets – as well as the different types of consents the various assets, and work on them, requires. A regime that works for hydro-generation or wind will not be appropriate for routine works on ageing grid assets.

Policy and regulation needs to reflect the fact that the effects of renewable electricity and transmission activities are generally known. Conflicts with competing Government policy should be resolved through national direction, rather than being left to consent decisions at a local level. Hard decisions will need to be made – if avoidance policies are to apply to areas, we must know where they are, to assess their impact on our ability to retain the existing grid and expand it to meet our emission reduction targets.

Processes for obtaining other environmental approvals similarly need to be streamlined – including under the Conservation Act and Wildlife Act. Further, the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act will require changes to enable offshore wind and associated transmission projects.

The regime for obtaining property rights likewise needs to be fit-for-purpose – such as moving to a regime that authorises works to occur and allows the quantum of compensation to be determined separately to the occurrence of the work, in order to speed up the process. Other jurisdictions (including New South Wales, with its Land Acquisition (Just Terms Compensation) Act), have also introduced an element of standardisation to the compensation paid for the impact of transmission assets on the land, which are also worthy of consideration for Aotearoa New Zealand. We encourage the government to broaden the remit of its policy consideration to these wider property and planning elements, as there can be significant impediments beyond resource management legislative requirements.

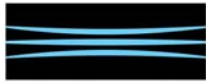
Yours faithfully



Chantelle Bramley
General Manager Strategy & Customer
Acting General Manager Grid Development

Attachments:

1. Submission - Measures for Transition to an Expanded and Highly Renewable Electricity System
2. Submission - Gas Transition Plan Issues Paper
3. Submission – Developing a Regulatory Framework for Offshore Renewable Energy
4. Submission – Interim Hydrogen Roadmap



Ministry of Business, Innovation and Employment

By email: electricitymarkets@mbie.govt.nz

7 November 2023

Transpower's submission to the MBIE consultation – Measures for Transition to an Expanded and Highly Renewable Electricity System

Transpower welcomes the opportunity to respond to the Ministry of Business, Innovation and Employment (MBIE) *Measures for Transition to an Expanded and Highly Renewable Electricity System* consultation paper. The paper, and the wider *Advancing New Zealand's Energy Transition* consultation package, demonstrate the interdependencies between the many work programmes of the regulatory and policy agencies impacting investment in, and operation of, the energy sector.

The energy transition consultation comes at a time when we need an urgent response to climate change. If Aotearoa New Zealand is to meet its emission reduction targets by 2030 and 2050, then the electricity sector will need to produce and transmit ~70% more renewable electricity than it does now. This amount is largely accepted as the base case, with further opportunities to electrify hard-to-abate sectors such as aviation using e-fuels. The sector needs to accelerate production and transmission and keep it up for decades.

In doing so, however, we need to ensure the electricity market and the power system delivers reliable, low-cost electricity. If consumers across the economy do not have confidence that electricity supply will be consistently affordable and reliable, they will not transition away from other sources of energy – and the opportunity to decarbonise our economy will be lost.

This requires considerable urgency in ensuring we have our policy and regulatory settings right – to ensure the market is well-placed to respond to the challenge through efficient wholesale market design that incentivises the right amount and mix of generation capacity; that regulated network businesses can readily invest in a way that balances affordability with the need to build ahead of demand; and industry regulators have the right roles and responsibilities and are funded to progress reform at pace. The interdependencies across portfolios need to be addressed with a particular focus on the importance of the consenting and property rights regime for the electricity transition.

MBIE's suite of consultation papers captures most of these issues and provides a thorough discussion of what might need to be considered to address them. The only exception is on the issue of property rights for new infrastructure¹ which must be more thoroughly considered. Transpower has provided a summary of the priority areas for attention, as well as more detailed submissions, on each paper.

Our responses to MBIE's consultation questions are provided in the Appendix to this submission. Where we have no comment on a question, the question has been deleted.

¹ And upgraded infrastructure, where the upgrade goes beyond our existing rights.

Appendix: Responses to consultation questions

Part 1: Growing Renewable Generation

Are any extra measures needed to support new renewable generation during the transition?

1. **Please keep in mind existing investment incentives through the energy-only market and the ETS, and also available risk management products. Any new measures should add to (and not undermine or distort) investment that could occur without the measures.**

There are several interdependent measures that must be prioritised to enable the investment in renewable generation and the transmission and distribution networks so that we meet consumer demand and enable access to the electricity market:

- The Commerce Commission and Electricity Authority should have explicit requirements related to climate change considerations in their regulatory mandates. Refer to our response to question 40.
- The transmission investment test in the Capex Input Methodology (IM) is likely to be too restrictive for the anticipatory investment required to enable the transition. Notwithstanding any changes the Commerce Commission makes to the Transpower Capex IM as part of the IMs review in December this year, we consider that more regular amendments will be required to support the transition. Refer to our response to question 27.
- Managing the fossil fuel transition risk will require sufficient flexible supply and demand-side resources to be available to reliably and efficiently balance the power system in real time as we move to a more renewable electricity system. Maintaining this balance will be critical to build confidence in electrification as the best way to decarbonise the economy. There are live issues that must be addressed with a sense of urgency. Many solutions have already been developed and we now need regulatory action to implement changes at pace. Refer to our response to question 8.
- For offshore wind, a combined Transpower- and developer-led model would provide for the coordinated development of transmission infrastructure. Transpower's onshore role should be extended offshore for consistency and to maintain a stable, reliable grid while allowing for optimised planning solutions. Refer to our response to question 57.
- Changes are required to environmental and property legislation, to ensure renewable generation and transmission can be developed at pace. Policy barriers in, and time delays created by, the Resource Management Act (RMA), and its national direction, and broader environmental legislation must be removed to enable both onshore and offshore development. In relation to the allocation of property rights, the Public Works Act and/or Electricity Act must contain quicker processes, such as moving from an authorisation regime to a compensation regime, as occurs in other jurisdictions. Refer to our response to questions 2 and 57.

2. **If you think extra measures are needed to support renewable generation, which ones should the government prioritise developing and where and when should they be used? What are the issues and risks that should be considered in relation to such measures?**

Changes to other legislation and national direction are required to support rapid expansion of renewable electricity

Part 1: Growing Renewable Generation

Changes to both environmental and property rights legislation is required to enable the energy transition. Transpower agrees with MBIE that existing Resource Management Act (RMA) national direction for renewable electricity generation and electricity transmission is no longer appropriate to achieve the pace of change required.² Transpower agrees the current national direction can lead to consenting processes (for both existing and new assets) that are complex, lengthy, costly, uncertain and litigious.³

If Aotearoa New Zealand is going to meet its emission reduction targets, the environmental authorisation of renewable electricity generation activities, and electricity transmission activities, needs to be more certain and more permissive. The regime needs to enable approvals to be obtained quickly – but also ahead of need. The regime must recognise the differences between generation and transmission assets – and between greenfield assets and routine works on existing assets – as well as the different types of consents the various assets, and work on them, requires. A regime that works for hydro-generation or wind will not be appropriate for routine works on ageing grid assets. Routine works should not require consents – permitted activities can be developed that contain appropriate environmental protection.

Policy and regulation need to reflect the fact that the effects of renewable electricity and transmission activities are generally known. Conflicts with competing Government policy should be resolved through national direction, rather than being left to consent decisions at a local level. Hard decisions will need to be made – if avoidance policies are to apply to areas, we must know where they are, to assess their impact on our ability to retain the existing grid and expand it to meet our emission reduction targets.

Processes for obtaining other environmental approvals similarly need to be streamlined – including under the Conservation Act and Wildlife Act. Further, the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act will require changes to enable offshore wind and associated transmission projects.

The regime for obtaining property rights likewise must be to be fit-for-purpose – such as moving to a regime that authorises works to occur and allows the quantum of compensation to be determined separately to the occurrence of the work, in order to speed up the process. Other jurisdictions (including New South Wales, with its Land Acquisition (Just Terms Compensation) Act) have also introduced an element of standardisation to the compensation paid for the impact of transmission assets on the land, which are worthy of consideration for Aotearoa New Zealand. We encourage the Government to broaden the remit of their policy consideration to these wider property and planning elements, as there can be significant impediments beyond Resource Management legislative requirements.

Update to the Electricity Codes of Practice for Harmonic Levels (NZECP 36:1993 or ECP36) is urgently required

The Electricity Code of Practice (ECP) for Harmonic Levels (NZECP 36:1993 or ECP36) is based on the Limitation of Harmonic Levels Notice 1981 and sets acceptable levels of harmonic voltages and currents which may be introduced into an electricity supply system by a consumer's installation. ECP36 was last updated in 1993 and now limits the ability to connect new generation to the grid in a cost-effective manner.

² Strengthening National Direction on Renewable Electricity Generation and Electricity Transmission, Consultation Document, April 2023, Message from Ministers.

³ Strengthening National Direction on Renewable Electricity Generation and Electricity Transmission, Consultation Document, April 2023, Page 5.

Part 1: Growing Renewable Generation

New types of generation create more 'electricity pollution' than conventional hydro and thermal generation. For example, solar panels produce a Direct Current (DC) form of electricity where voltage and current waveforms are constant. This is unlike our conventional Alternating Current (AC) system. To interface with the grid the DC is converted to AC by an inverter. Inverters use semi-conductor switches to synthesise an AC voltage waveform to achieve the energy conversion. The synthesised AC waveform contains 'harmonics'— a form of 'electrical pollution' that is a by-product of the conversion process.

While modern inverters introduce distorting current that is relatively low, it adds distortion to the existing background levels in an electrical system. Inverter equipment design choices can be made to limit distortion, but with added cost and/or complexity. It is not practical to achieve near zero added distortion to the grid (unlike conventional hydro or thermal generation).

For new installations Transpower allocates a percentage of the available headroom (the difference between the allowed limits and the measured existing background levels) at a given location. We are presently reviewing this allocation methodology.

However, Aotearoa New Zealand grid harmonic voltage levels are near (and in some instances exceed) ECP36 regulations which means there is little or no headroom at some locations to allocate a reasonable distortion allowance.

Additional project costs will be incurred to mitigate the level of harmonic emissions to within the allocation. Added project complexity will have knock-on effects too e.g. if harmonic filtering is installed as a mitigation, then associated fundamental frequency voltage rise at light loads add to the burden to operationally manage the grid.

ECP36 is out of line with modern international best practice. The table below highlights the difference between the allowable voltage distortion levels from the ECP36 regulations and IEC/EEA guidelines at a selection of key harmonic orders.

Harmonic order	% limits		
	ECP36 V > 66 kV	IEC61000 V > 36kV	EEA Guideline V > 100kV
5	1.4	2.0	2.1
7	1.0	2.0	1.7
11	0.7	1.5	1.6
13	0.6	1.5	1.4

At grid voltage levels (i.e. 110kV & 220kV) the regulated limit for 7th Harmonic (350Hz) is 1.0% against IEC/EEA guideline of 2.0/1.7% respectively i.e. up to 100% difference which is significant.

If the ECP36 harmonic regulations were more aligned

with IEC or local EEA guidelines this would provide headroom for new renewable connections without having to over-invest in mitigations or making the grid more complex than necessary (while still maintaining grid safety and reliability).

Amendments to ECP36 are urgently required. We would welcome the opportunity to work with officials and the wider industry to ensure ECP36 can support the energy transition.

4. **Do you think measures could be needed to support new firming/dispatchable capacity (resources reliably available when called on to generate)? If yes, which kind of measures? What needs do you think those measures could meet and why?**

Part 1: Growing Renewable Generation

The market must provide sufficient incentives for investment and operation of flexibility resources to handle the increased intermittency.⁴ Operational risks will increase with the increase of intermittent generation without sufficient flexible firm capacity.⁵

The potential exit of large thermal generation plant poses operational risks due to their relative size. The power system requires sufficient replacement resources before thermal exit to avoid transitional reliability reduction. The reliability risk is related to energy/capacity and voltage/inertia. Market options are required that will reduce this risk. The need for reactive backstop mechanisms, would be heightened if the risk of disorderly thermal exit increases.⁶

These options include improving incentives for flexible resources in the market such as a standby ancillary service, updating shortage price values, improvements to the contracts markets, monitoring and reducing barriers to demand-side participation. These options have been raised by the Electricity Authority and Market Development Advisory Group (MDAG) as part of their investigations. Some of the options are well advanced. It is now time to implement changes.

The Authority's Future Security and Resilience programme is also an important piece of work with which, in our role as System Operator, we are supporting to ensure power system security is maintained through the transition. This work programme needs accelerating, adequate funding and resources so that the required investigations and implementation occurs at pace with the transition.

Markets can take better actions with better information. The industry needs to better understand the system risks. As part of the information we provide as System Operator to the market participants, information on security of supply needs to evolve with the changing risks, economics and expectations in the market. This has been discussed in our Market Insight Paper.⁷

Changes should be made to the enabling policy requirements – such as the National Policy Statement on Electricity Transmission, National Policy Statement on Renewable Electricity Generation, and New Zealand Coastal Policy Statement. Changes to other legislation is also required to address property rights, such as the Public Works Act and/or Electricity Act.

5. **Are any measures needed to support storage (such as battery energy storage systems or BESS) during the transition? If yes, what types of measures do you think should be considered and why?**

Our preference is technology-neutral market-based signals that recognise the value delivered by a plant to the electricity system regardless of the technology it uses to do so. Currently, there are many parts of the Code that are not technology neutral. They do not account for new technologies and consequently have not stood the test of time, including for BESS. The market design, market tools and regulations need reform to ensure they can reward and incentivise the value offered by BESS in the different energy and ancillary services markets. While improvements have been made in ensuring their participation in the energy market, the market tools cannot adequately reflect the increased value offered by BESS in some ancillary service markets. Further enhancements are needed. Technology-neutral market enhancements to increase the incentives for flexible resources (such as a standby ancillary service and updates to shortfall pricing) will also help improve the incentives for BESS as well as other flexible resources including demand response.

⁴ Consistent with Transpower's submission to the Market Development Advisory Group (MDAG) Price Discovery under 100% Renewable Electricity Supply - Issues Discussion Paper, March 2022 and Transpower's submission to the Authority's consultation Ensuring an orderly thermal transition, July 2023.

⁵ Consistent with the System Operator's Winter peak analysis: 2024 and 2025s, April 2023 (page 13) and the Security of Supply Annual Assessment 2023, June 2023 (page 7, 8).

⁶ Consistent with Transpower's submission to the Authority's consultation Ensuring an orderly thermal transition, July 2023.

⁷ See the System Operator's Evolving security of supply assessment in New Zealand, July 2023.

Part 1: Growing Renewable Generation

If you answered yes to question 4 or 5 above, should the support be limited to renewable generation and renewable storage technologies only or made available across a range of other technologies?

6.

Keep in mind that fossil fuels are generally the cheapest option for firming, though this may change over time as renewable options (particularly batteries) become more efficient and affordable.

As per our submission on the Gas Transition Plan Issues Paper:

- An orderly gas transition is an enabler, along with diverse set of other supply and demand-side options, to get to a more renewable energy supply, while maintaining system reliability and affordability, including reducing the need for extra grid capacity just for peaks.
- Specifically, gas-fired generation can help with peaking, dry year options and power system security⁸ with baseload thermal exit. This generation can also manage delays in connecting new renewable generation and batteries (which may be delayed for a variety of reasons including supply chain constraints, consenting/property rights acquisition or delays in transmission build).
- We do not favour approaches that actively incentivise or disincentivise gas use. Active incentives can be to the detriment of other options that could achieve the transition at pace, and in a more affordable way (as well as better utilise resources we already have). Market-based signals, including a well-functioning emission trading scheme (ETS), provide a more durable long-term solution compared to any active disincentives on gas usage.
- We need to get the regulatory and policy frameworks right to support market signals for the uptake of distributed energy resources, energy efficiency and renewables, as well as overcome barriers to the timely roll out of electricity transmission infrastructure.
- These frameworks include market developments that improve incentives for flexible resources, a well-functioning ETS and maturing of the transmission investment test to enable a faster, more certain, and more permissive approach to enabling investment in transmission infrastructure to meet future anticipated increases in electricity demand.
- If specific incentives, outside of market-based approaches, are required for gas storage, biogas or hydrogen uptakes, the system impact of these would need to be understood and aligned with other incentives provided to other parts of the sector, including for offshore wind.

8.

Are any measure(s) needed to support existing or new fossil gas fired peaking generation, so as to help keep consumer prices affordable and support new renewable investment?

Aotearoa New Zealand's electricity system faces both peak and energy demand challenges.⁹ Winter-peak demand is increasing, and there is an increasingly tight supply-demand balance to meet current energy needs. As peak demand grows, additional capacity is needed to meet it, and as the contribution from intermittent generation grows so does the need for other resources to maintain supply when there is no wind or sunshine. Investment in flexible capacity and resources has not

⁸ These include maintaining adequate voltage, frequency and system strength.

⁹ The energy challenge is having enough energy to supply to customers over the winter months when fuel from rainfall, the wind and the sun are typically in shorter supply (typically measured in kWh or MWh). The peak demand challenge is having enough capacity available to respond reliably and quickly when demand in aggregate across the motu peaks, which typically occurs on a cold, still and dark winter's evening (measured in kW or MW).

Part 1: Growing Renewable Generation

kept pace with demand, a situation that became clear during the last two winters. The tightness of supply-side capacity to meet demand also means it has become increasingly difficult for Transpower and generators to take the planned maintenance outages that are essential to the longer-term reliability of the electricity system.

We have been fortunate to have healthy levels of rainfall and hydro storage during the last two winters to offset constraints on thermal generation availability, including material unplanned outages in winter 2023 at Huntly and Stratford power stations. Had these coincided with drier conditions the outcome for households, businesses, and communities could have been very different. Unplanned outages and retirements of existing ageing thermal plant heightens the risk to security of supply.

These are live issues that must be dealt with now and cannot be left for some-time in the future. While there are sufficient consented projects in the generation pipeline, not all the currently consented renewable projects are committed. If the expected new generation does not come online before the decommissioning of existing thermal generation, or sufficient investment in firming is undertaken, then the supply margins may not be sufficient to meet demand from 2025 – particularly to meet the peak demand challenge in having enough fast starting generation, or other options, to cover a cold night during the winter peak period.¹⁰ Additional flexible resources such as batteries, demand response and gas-fired peaking generation would help address this peaking issue. Gas-fired generation will help to address not only the peaking issue and, also in part, the winter energy issue in a dry year.

Transpower is supportive of the continued implementation of the Electricity Authority's winter initiatives, and the future security and resilience (FSR) project. Given the importance and urgency of all these initiatives and solutions to the successful transition of the power system, we are concerned that they are not better prioritised, adequately funded, or resourced. Solutions are largely known. It's now time to implement changes.

We also support the development of market-based incentives. However, these incentives will need to be supported with appropriate regulatory and market development settings. For example, adequate performance obligations on asset owners to ensure secure operation of the power system,¹¹ reducing uncertainty to the market on expected plant availability,¹² tools and information, and additional monitoring and requirements to encourage more demand-side participation bids into the electricity market.¹³

9. **If you answered yes to question 8 above, what measures should be considered and why? What are the possible risks and issues with these measures?**

Refer to our answer to question 8.

10. **If you answered yes to question 8 above, what rules would be needed so that fossil gas generation remains in the electricity market only as long as needed for the transition, as part of phase down of fossil gas?**

Refer to our answer to question 6.

¹⁰ See [Transpower, Security of Supply Assessment 2023, 26 June 2023](#)

¹¹ As currently being considered through the Electricity Authority's review of Part 8 of the Electricity Industry Participation Code.

¹² Such as: improved information plant outage and greater visibility on potential retirement as considered through the Electricity Authority's FSR programme Orderly thermal transition paper).

¹³ As outlined by the MDAG's DSF options.

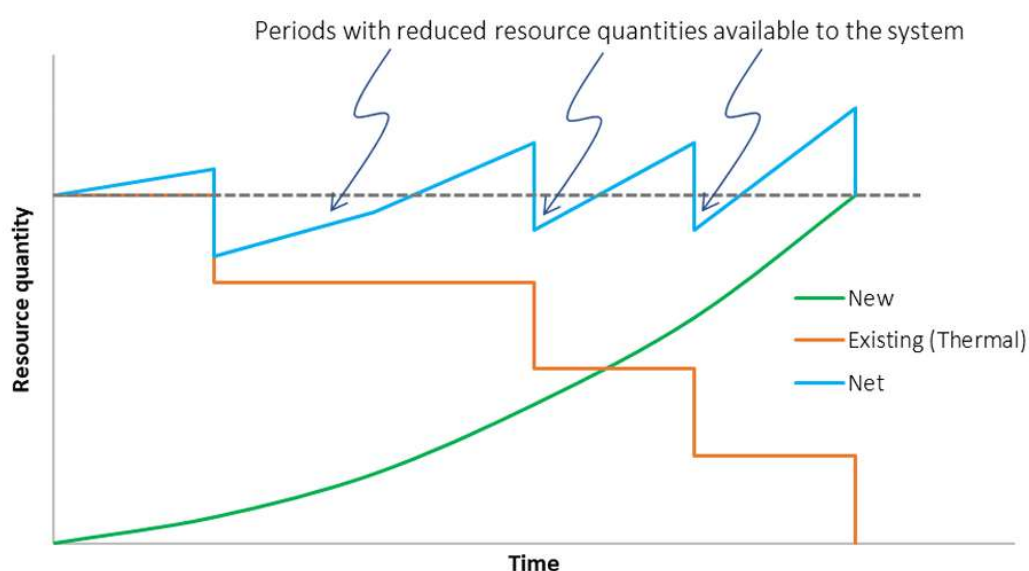
Part 1: Growing Renewable Generation

12. Do you agree that specific measures could be needed to support the managed phasedown of existing fossil fuel plants, for security of supply during the transition?

The relative size of the thermal units creates significant risks for the transition.

The size of the generating capacity of the existing thermal units means if one or more is decommissioned there will be material step reductions in the resources available to balance energy/capacity/ voltage/frequency. These step reductions could impact power system reliability until sufficient alternative resources enter the market. A stylised example of this stepped reduction is shown in Figure 1 (the top line, in blue).

The stepped reduction in existing resources (shown in orange) is a characteristic of the size of the slower starting thermal generators. If there are insufficient new resources (shown in green) added before the existing resources exit, the net effect will be a reduction in the available resources to the market (shown in blue). Even if new resources are able to completely offset the exiting thermal generators by the end of the transition, there is still a significant reliability risk during the transition as major thermal generation plant exits.



There is typically a lag between the system need becoming certain and resources entering the market due to a variety of factors (such as consenting delays, regulatory and demand uncertainty, and cost pressures¹⁴), which will result in extended periods of resource inadequacy and a reduction in system reliability. This would impact confidence in the electricity market and the future electrification of the wider economy.

A required outcome during the transition is ensuring that sufficient alternative backup resources are available to the market before the thermal units exit. There are many factors that need to be considered to achieve this, including consenting of both generation and network assets.

See our submission to the Electricity Authority, Ensuring an Orderly Thermal Transition, 25 July 2023, for more details about our views on this matter.¹⁵

¹⁴ See pages 2, 17-27 of the [generation investment survey](#) undertaken as part of the Electricity Authority's wholesale market competition review in October 2022. Some of these have also been raised by Contact (see pages 7, 27 and 34 of [Contact's 2022 Annual Report](#)

¹⁵ [Ensuring an orderly Thermal Transition July 2023](#)

Part 1: Growing Renewable Generation

13. **If you answered yes to question 12 above, what measures do you think could be appropriate and why? What conditions do think you should be placed on plant operation?**

For example, do you have any views on whether there should be a minimum notice period for reductions in plant capacity, and/or for placing older fossil fuel plant in a strategic reserve?

An additional integrated standby ancillary service will become increasingly critical as the penetration of intermittent generation increases. It will strengthen the incentives for investment in additional flexible resources which reduce operational capacity risks when the thermal units decommission. This was raised as one of the options in the Electricity Authority's Winter 23 consultation paper (Option F: New integrated ancillary service).

A review of the administered prices applied during scarcity situations should occur. This was also one of the options considered by the Authority as part of its Winter 23 consultation paper (Option I). Updates to the administered prices applied during scarcity, would increase the incentives for investment in additional resources and contracting to manage price risk, both of which are important to reduce the thermal transition risk.

Further, the industry needs to better understand the potential system risks related to future energy and capacity. This requires that the security of supply standards evolve to reflect the changing risks, economics and expectations. These are discussed further in our Market Insight Paper.¹⁶

We support further investigation of a minimum notice period for plant capacity reductions. We also support investigation to identify a preferred back-stop option that could potentially be used (at short-notice) if the risk of a thermal exit is high (without sufficient alternative resources in place).

17. **Do you have any views on additional mechanisms that could be developed to provide more information and certainty to industry participants?**

In our System Operator role, we monitor security of supply to meet demand on a time horizon from real-time out to 10 years into the future. Our approach to security of supply must evolve to reflect changes in the market and system.

Information on security of supply risks must evolve to reflect the changing risks, changing economics and changing expectations of the power system. An example of a changing risk, in a future with high intermittent renewable generation (which will make up a large portion of the alternative energy resources), is that the power system will be more exposed to variable weather conditions and weather events. Greater consideration of these risks is needed in the adequacy standards (e.g. risks posed by extended periods of calm, cloudy days).

In our role as System Operator, we have published a Market Insight Paper¹⁷ on key issues for evolving security of supply assessments and information provision. We are seeking feedback from stakeholders on these key issues.

We collaborated with and implemented the Electricity Authority's winter 23 initiatives to increase information to the market. This included:

- 1) Residuals via WITS – showing residual generation available to the System Operator to meet demand.

¹⁶ See [here](#)

¹⁷ https://tpow-corp-production.s3.ap-southeast-2.amazonaws.com/public/bulk-upload/documents/EvolvingSecurityOfSupplyAssessmentsNZ_FINAL.pdf?VersionId=Aoqf7iIsHgyComHT_Vtz4rA2AgZ5vwtk

Part 1: Growing Renewable Generation

- 2) Sensitivity schedules via WITS – providing a range of forecast price outcomes if actuals deviate from forecast.
- 3) Wind forecast generation via EM6 – showing the range of wind generation we can expect to see against a central forecast.
- 4) Controllable load availability – showing how much manageable load is available to the System Operator should an event happen.

This enhanced information will help market participants make more informed generation decisions, underpinned by an assumption that a well-informed market will make better decisions. Some of the added information is only a temporary measure (2-4). Its permanent implementation will improve information to the market to inform decision-making.

Part 2: Competitive Markets

18. **Do you agree that the key competition issue in the electricity market is the prospect of increased market concentration in flexible generation, as the role of fossil fuel generation reduces over time?**

The electricity market will better deliver the changes needed for a successful transition, including the large forecast uplift in new generation requirements, if it is based on the decisions of a large and diverse mix of generators. Highly competitive markets should result in new supply being brought on earlier and in greater quantity to meet demand growth.

The work the Electricity Authority (and MDAG) has done on the wholesale market, which MBIE has drawn on, highlights competition problems the electricity industry currently faces and how they could potentially evolve in the future. Further reforms may be needed to ensure the benefits of competitive markets are leveraged to the benefit of electricity consumers.

19. **Aside from increased market concentration of flexible generation, what other competition issues should be considered and why?**

Under Real Time Pricing, economic and physical withholding of generation and demand-side flexibility can result in less reserves being dispatched to cover the contingency events risks. We need to ensure these are adequately monitored so the system security is not being compromised.

We also need to ensure the scarcity prices remain adequately set as system conditions evolve/change. This is part of Electricity Authority Future Security and Resilience work, which Transpower supports through our role as System Operator.

23. **Are measures needed to improve liquidity in contract markets and/or to limit generator market power being used in retail markets? If yes, what measures do you have in mind, and what would be the costs and benefits?**

A well-functioning and liquid contract market is important for the successful operation of competition in the downstream retail market. Third parties should be able to negotiate for competitively priced hedges on equal and non-discriminatory terms.

True liquidity (and therefore competition) requires traded volumes to increase by many multiples. We consider that improving the depth and resilience of the contract market should be given high priority.

Part 2: Competitive Markets

Transpower recently published a paper on the role of corporate Power Purchase Agreements (PPAs) to drive new renewable electricity investment in New Zealand. This paper highlights market, commercial and regulatory barriers and examples used internationally to address liquidity in contract and markets.¹⁸

24. **Should an access pricing regime be looked at more closely to improve retail competition (beyond the flexibility access code proposed by the Market Development Advisory Group or MDAG)?**

Yes. See response to Q23. Access regulation is an orthodox part of competition policy in vertically-integrated industries where access products are needed to compete in downstream markets.

25. **What extra measures around electricity market competition, if any, do you think the government should explore or develop?**

We support MBIE (and other agencies) advancing work in these areas, such as resource management reform, which may help facilitate new entry and investment, and potential reforms such as horizontal and vertical reform options in the wholesale electricity market.

26. **Do you think a single buyer model for the wholesale electricity market should be looked at further? If so, why? If not, why not?**

Transpower does not support a single buyer model. We consider that the focus should be ensuring the wholesale electricity market is fully competitive and consequently delivers efficient (least cost), timely investment in renewable generation by a diverse range of suppliers.

Part 3: Networks for the Future

27. **Do you consider that the balance of risks between investing too late and too early in electricity transmission may have changed, compared to historically? If so, why?**

We support MBIE's recognition of the importance of network investment to enable the energy transition, and that it is better to invest too early rather than too late.

The growing demand for new generation and load connections is becoming an increasingly important issue. The transmission investment test in the Capex Input Methodology (IM) needs to enable coordination between grid planning and investment in generation and load. This requires a faster, more certain, and more permissive approach to enable investment in transmission infrastructure. The cost to consumers of investing too late far outweighs the cost of enabling the transition to occur in an optimal way.

The Commerce Commission is currently considering our proposal for a multi-stage project to invest in ensuring the core backbone of our transmission grid is ready to enable the energy transition over the coming decades – our Net Zero Grid Pathways (NZGP) programme. We expect the Commerce Commission's final decisions on stage one of our NZGP investment in early 2024.

The NZGP process has highlighted that the transmission investment test (in the Capex IM) does not appear to deal well with anticipatory investment to support an optimal transition path. This is because the uncertainties associated with the transition mean it is difficult to select a single 'best' investment option that maximises net electricity market benefits. However, options that may not

¹⁸ [Development of Power Purchase Agreements needed to enable decarbonisation at pace | Transpower](#)

Part 3: Networks for the Future

currently be estimated to provide the highest net benefit may deliver better optionality as the transition evolves.

We have submitted to the Commerce Commission's Input Methodologies (IMs) review on changes, including to the transmission investment test, that would better support anticipatory network investments to be made in alignment with the government's sustainability objectives and commitments.¹⁹ The Commerce Commission's final decisions on the IMs (including the Capex IM) will be made in December this year.

The outcome of the NZGP process and the final decisions on the IMs will provide a better understanding of whether barriers remain and whether there are further barriers in the regulatory framework. However, amendments will continue to be needed to the IMs in the coming years as the transition accelerates and we learn from experience. We expect to work with the Commission on approaches to doing so with more agility than can be achieved with the statutory 7-year review cycle of the IMs.

A significant change to the transmission investment test would be to allow the Commission to incorporate benefits outside of the electricity market. While decarbonisation and the drive to electrify should be reflected in demand scenarios, investments to support decarbonisation are likely to generate benefits outside of the electricity market. For example, from overseas experience a Renewable Energy Zones (REZ) model can accelerate the connection of renewables by coordinating transmission, distribution, and generation investment, and supporting connections of new energy intensive industries. Development of REZs requires policy changes to give effect to the benefits of co-ordinated planning. While internationally REZ models have been successful for the market they operate in, a REZ model for New Zealand must be fit for purpose.

There are some aspects of the transition, like the REZ opportunity, that could be supported by a coordinating entity. As MBIE notes, a coordinator/planner role has been created in other jurisdictions to support their transitions. Transpower is well placed to perform this role.

28. **Are there any additional actions needed to ensure enough focus and investment on maintaining a resilient national grid?**

We are anticipating our closing regulated asset base (RAB) in 2035 to be more than double our closing RAB in 2023 (nominally). This is equivalent to the growth in the RAB observed from 2008 to 2020 – which at the time represented a substantial uplift in transmission investment compared to historic levels.

MBIE has appropriately identified that the Commerce Commission and its decisions on the IMs review (the Capex IM in particular) is the appropriate vehicle for addressing the challenges of a changing investment landscape. We largely agree. Refer to our response to question 27.

The Commerce Commission and Electricity Authority both have responsibility for aspects of economic regulation of transmission, so the issues relating to the uplift in required transmission investment are not solely the responsibility of the Commerce Commission. How transmission and distribution network services are priced, is a matter presently within the Electricity Authority's jurisdiction. The revenue allowance is set by the Commerce Commission under Part 4 Commerce Act. Pricing methodologies and revenue setting have a symbiotic relationship. The pricing methodologies that are used can determine how networks are used and the amount of future investment (and revenue allowance) that will be needed. Alignment of policy and regulatory settings

¹⁹ e.g. Transpower is advocating for a proportionate major capex project (MCP) consultation process commensurate with investment need, type and likely options, and for additional uncertainty mechanisms for resilience expenditure and connection assets.

Part 3: Networks for the Future

for both regulators is critical to ensuring network infrastructure can meet the needs of electrification and the energy transition.

We are hearing from our customers that the TPM is highly complex and there is too much uncertainty about what their transmission costs would be if they invest. There is heightened need for anticipatory investment which provides opportunities for renewable generation. The Wairakei Ring and NIGUP investments are good examples of past transmission investments that enabled new renewable generation to displace fossil fuel generation. Under the current TPM approach anticipatory investment charging arrangements are complex. For example, there are intractable issues that the 'beneficiaries' of anticipatory capacity may be 'unknown and unknowable' but the TPM requires adoption of a hybrid of cost recovery pooling and 'beneficiaries pay', which places the costs of anticipatory investment to enable new generation onto regional load customers (the actual beneficiaries being future generators and all electricity consumers across the country).

Changes to environmental and property legislation and resource management national direction are required to support rapid expansion of renewable electricity:

Refer to our response to question 2.

29.

Do you agree we have identified the biggest issues with existing regulation of electricity distribution networks?

The pathway to 2050 will require electricity distribution businesses to deliver more by way of new technology, investment, services and operations, which will create new demands on governance, expertise and balance sheets. All of these elements must be a focus for policy makers and regulatory agencies to ensure electricity distribution businesses can play this vital role in electrifying Aotearoa New Zealand.

38.

Should the Electricity Authority look at more prescriptive regulation of electricity distributors' pricing? What key things would need to be looked at and included in more prescriptive pricing regulation?

Please refer to our recent [submission](#) and [cross-submission](#) to the Electricity Authority's consultation on *Targeted Reform of Distribution Pricing*.

We note the Electricity Pricing Review (EPR) recommendations on Government Policy Statements for distribution and transmission pricing have not been adopted.²⁰ We also note that Part 6 Telecommunications Act (fibre) and the Water Services Legislation Bill provide precedent for legislated pricing principles which could provide useful direction for electricity networks. For example:

- Requirements for geographically averaged pricing (fibre)/only allowing different groups of consumers to be charged differently if those groups receive different levels or types of services or the cost of providing services to those groups is different;
- Requirements that charges reflect the costs of service provision, including promoting the efficient use of resources; and
- Requirements that charges should be simple, transparent and easy for consumers to understand.

²⁰ [Electricity Price Review Final Report](#), May 2019 – recommendations E1 and E2 (issues government policy statements on transmission and distribution pricing).

Part 3: Networks for the Future

39. Do current arrangements support enough co-ordination between the Electricity Authority and the Commerce Commission when regulating electricity distributors? If not, what actions do you think should be taken to provide appropriate co-ordination?

The Council of Energy Regulators is a good step forward in ensuring alignment and coordination. This would be enhanced by transparency of the Council's agendas, meetings, and minutes. This transparency would improve stakeholders' ability to assess the coordination between the regulators and likely policy direction. A clear mapping between the interlinkages between the regulators' workplans would be helpful. While the regulators have published their forward looking workplans, it is not clear where these interact and what the interdependencies are.

40. Will the existing statutory objectives of the Electricity Authority and Commerce Commission adequately support key objectives for the energy transition?

Transpower agrees with MBIE that a whole-of-system approach will be needed to successfully meet the challenges of an energy transition to a low emissions economy. We consider the consultation package effectively demonstrates the interdependencies between the work programmes of the Commerce Commission, Electricity Authority and Gas Industry Company, and the importance of policy alignment. The role of the Climate Change Commission in providing apolitical, cross-economy coordination and direction to inform the work of other regulatory bodies, is also clear.

Each regulator's interpretation of its individual form of "efficient operation" for the "long-term benefit of consumers" statutory objective will affect how it operates to support climate change policies. For example, the Electricity Authority's interpretation of its statutory objective is that:

*"efficient operation of the electricity industry is interpreted within the context of other legislation and regulation affecting the electricity industry, and in particular does not allow consideration of pan-industry externalities such as carbon emissions."*²¹

Options must be considered to better align industry regulation with broader climate policies, without compromising the independence of industry regulators. In particular, both the Electricity Authority and Commerce Commission should have explicit requirements related to climate change in their mandates and reflected in legislation and their respective regulatory instruments. Legislative options could require industry regulators to "give effect to" or "have particular regard to" Government Policy Statements (GPS) in relation to climate change.²² A GPS could in turn clarify that applying statutory objectives for "efficient operation" includes consideration of environmental and climate effects,²³ and requires industry regulators to promote and support environmental and climate change outcomes.²⁴

43. Is there a case for central government to direct the Commerce Commission, when dealing with Electricity Distributors and Transpower, to take account of climate change objectives by amending the Commerce Act and/or through a Government Policy Statement (GPS)?

Electricity sector regulators should pull in the same direction and have regard to the Government's long-term vision and priorities for the sector, which are driven by the 2050 climate change goals. This could help to establish overall coherence for all sector participants, including regulators. In

²¹ [Interpretation of the Authority's statutory objective 2011 - WITH December 2022 EXPLANATORY NOTE](#), at 2.4.1(b)

²² Adopting precedent from existing legislation including the Resource Management Act (RMA), the Water Services Entities Act and/or the Spatial Planning Act.

²³ In the same way as they consider any other costs and benefits.

²⁴ For example, following s 54Q Commerce Act precedent.

Part 3: Networks for the Future

particular, both the Electricity Authority and Commerce Commission should have explicit objectives related to emission reduction in their mandates and reflected in legislation.

We do not think that emission reductions should be linked to specific targets, and we agree with the Productivity Commission's recommendation against establishing specific emissions reductions objectives in the electricity sector, and in favour of an economy-wide approach.

We note the position of the Commerce Commission that caution is required in considering changes to a regulator's statutory objective.²⁵ We recognise it can be problematic if industry regulators have to balance multiple (potentially conflicting) objectives. However, no-one is asking regulators to get ahead of policy decisions: the emissions reduction policy target is set. The ask of regulators, as is common in regulatory decision-making, is to manage necessary trade-offs. Emissions reductions must become part of those trade-off discussions if we are to successfully deliver infrastructure to meet emissions goals.

If you answered yes to question 43, please explain why and indicate:

44.

- **What measures should be used to provide direction to the Commerce Commission and what specific issues should be addressed?**

How would investment in electricity networks be impacted by a direction requiring more explicit consideration of climate change objectives? Please provide evidence.

Government must consider options to create better clarity of expectations for alignment of industry regulation with broader climate policies without compromising the independence of industry regulators. For example:

- At a minimum, a Government Policy Statement (GPS) can be used to require electricity sector regulators to have regard to the Government's long-term vision and priorities for the sector, which are driven by the 2050 climate change goals.²⁶ This would establish overall coherence for all sector participants, including regulators;
- Legislative changes can be made, based on the Resource Management Act and Water Services Entities Act etc precedent, to require industry regulators to "give effect to" or, following the Spatial Planning Act, to "have particular regard to" GPS in relation to climate change;
- Legislative clarification that the industry regulators' statutory objectives – specifically "efficient operation" – includes environmental and climate effects (in the same way as they consider any other costs and benefits).²⁷ This would address the issues the Electricity Authority has raised over its interpretation while retaining the singular "long-term benefit of consumers" objective; and/or
- Requiring industry regulators to promote and support environmental and climate change outcomes (e.g. following s 54Q Commerce Act precedent).²⁸

²⁵ Commerce Commission, memorandum, Response to May 2018 questions from Expert Advisory Panel, 8 June 2018, paragraph 58.

²⁶ Adopting precedent from existing legislation including the Resource Management Act (RMA), the Water Services Entities Act and/or the Spatial Planning Act.

²⁷ In the same way as they consider any other costs and benefits.

²⁸ For example, following s 54Q Commerce Act precedent.

Part 4: Responsive Demand and Smarter Systems

45. **Would government setting out the future structure of a common digital energy infrastructure (to allow trading of distributed flexibility) support co-ordinated action to increase use of distributed flexibility?**

In our role as the System Operator, we produced a Market Insight Paper on our view of enabling distributed flexibility to support whole of system reliability and efficiency.²⁹

We note that flexibility services interacting with the System Operator and wholesale market should use the existing System Operator interfaces. Using existing interfaces provides a level playing field for all flexibility service providers, and these interfaces are proven to be robust, reliable, and are already included in the market's regulatory settings. This will also lower implementation costs and timeframes. The System Operator has existing interfaces for receipt of bids and offers (via WITS) and issuing dispatch instructions (via ICCP and webservices technology).

47. **Aside from work already underway, are there other areas where government should support collaboration to help grow and develop flexibility markets and improve outcomes? If yes, what areas and actions are a priority?**

An issue currently is the lack of coordination and the need to remove barriers for uptake. For example, the return on investment to implement a technology solution, including upfront cost and revenue streams from the value stack.

Part 5: Whole-of-system considerations

57. **What measures do you consider the government should prioritise to support the transition?**

Refer to our response to question 1 and the other parts of our responses noted there. In addition:

- **Co-ordination of offshore wind developments can deliver efficient outcomes:** Offshore wind has the potential to assist in renewable generation at a pace required for the transition. From our research on approaches used for offshore wind elsewhere, a combined Transpower- and developer-led model is best for the development of the associated offshore transmission infrastructure. Further, Transpower's onshore role should be extended offshore for consistency and to maintain a stable, reliable grid while allowing for optimised planning solutions. Transpower is supportive of a fit-for-purpose regulatory framework being developed for offshore wind. We will continue to work closely with regulators, developers and the offshore wind industry to develop the regulatory and policy settings. Refer also to our submission to the Gas Transition Plan Issues Paper.
- **Changes to other legislation and national direction are required to support rapid expansion of renewable electricity:** Refer to our response to question 2.

58. **Are there gaps in terms of information co-ordination or direction for decision-making as we transition towards an expanded and more highly renewable electricity system and meeting our emissions goals? Please provide examples of what you'd like to see in this area.**

²⁹ See <https://static.transpower.co.nz/public/bulk-upload/documents/Enabling%20whole%20system%20reliability%20and%20efficiency%20with%20distributed%20flexibility%20-%20a%20System%20Operator%20view.pdf?VersionId=Wp1z.WwhYuwK1FOtnQ35eFb9Dqzklzi>

Part 5: Whole-of-system considerations

As mentioned above in our response to question 27, there are some aspects of the transition, like the REZ opportunity, that could be supported by a coordinating entity. As MBIE notes, a coordinator/planner role has been created in other jurisdictions to support their transitions. Transpower is well placed to perform this role.

59.

Are there significant advantages in adopting a REZ model, or a central planning model (like the NSW EnergyCo), to coordinate electricity transmission investment in New Zealand?

Would a REZ model for local electricity distribution be an effective means of addressing first mover disadvantage with connecting to electricity distribution networks?

Aotearoa New Zealand's electricity market suffers from the same co-ordination problem as most energy-only markets – generators will not commit to projects unless they know grid capacity will be available, and transmission providers will not upgrade the grid until the generation is committed for fear of stranded assets. There is no 'commitment' mechanism in the existing market framework so Transpower can only invest once there is a reliability issue to address or where there are sufficient net electricity market benefits to justify the investment under the Commerce Commission's transmission investment test. In a world transitioning from higher cost fossil fuels to lower cost renewables, the market benefit from lower cost generation is clear.

We are no longer in that world – we already have a largely renewable electricity supply. We now need to ensure there is enough grid and generation capacity available – not only to ensure reliability but also to give certainty to large fossil fuelled industrial loads to invest in new electric technologies. Waiting until there is a grid reliability issue to invest will be too late and relying on electricity market benefits solely to justify transmission investment will get increasingly difficult, even as the urgency to reduce emissions increases.

The REZ concept takes a co-ordinated approach to planning generation and transmission build. It solves the 'chicken and egg' problem by forcing commitment from generators which allows transmission planning to progress. This co-ordination extends to load. From our review of REZ developments, some REZ frameworks actively engage with large energy users attracting them into the REZ with quicker, easier connection regimes. Others simply give certainty by providing visibility of when new capacity will come online. Most REZ frameworks also include some sort of fast-track consenting process and by establishing the need for new transmission within the design of the REZ, reduce the regulatory decision-making timeframes. We do not recommend the REZ models used within Australia's National Electricity Market are transplanted into Aotearoa New Zealand. They are solving an issue that Aotearoa New Zealand does not face - that is, supporting the transition away from large amounts of fossil fuel electricity generation capacity.

Overall, there is a role for a coordinator to help ensure transmission and generation investment occurs in an optimal way. As highlighted by MBIE, there are good examples of the role coordinators play in supporting a path to net zero by 2050 in other jurisdictions. Transpower could undertake a similar role here. We note MBIE's comments on the incentive energy only markets and the ETS provide, however the long-lead time for transmission projects mean that active coordination can assist in getting a more optimal outcome.

60.

Should MBIE regularly publish opportunities for generation investment to enable informed market decision-making?

Part 5: Whole-of-system considerations

Information to inform market decision making for generation is very useful. It will be more effective if supported with settings that enable transmission investment to meet electrification at pace (e.g. anticipatory investment).

Transpower has developed a connection enquiry information dashboard. This dashboard provides an aggregated view of our forward pipeline of works by count and size (MW) noting connection types and subtypes, their locations (by planning region), need dates (by Regulatory Control Period under Part 4 Commerce Act) and enquiry stages.³⁰ Further, we have provided a geospatial tool Envision that provides information about Transpower's capacity information to assist new generation developers in scoping potential locations.³¹

We are not clear on what information MBIE might publish about opportunities for generation investment that is not already provided through our own publicly available connection enquiry information sources.³² There is an opportunity for information to be provided consistently across the wider power system, including transmission and distribution. At present there is varying public information on opportunities in distribution networks. In March 2022, Transpower sent a request to the Electricity Authority for a proposal to amend the Electricity Industry Participation Code 2010 on transparency of generation connection enquiries, this is yet to be actioned. We would welcome the opportunity to work with MBIE on enhancements we could usefully make towards our information sources supporting that outcome.

61. How should the government balance the aims of sustainability, reliability and affordability as we transition to a renewable electricity system?

The energy transition will present challenges and difficult trade-offs in balancing energy security, affordability and sustainability. It will also create opportunities to lower overall energy costs for consumers as electrification intensifies.

The energy transition consultation comes at a time when we need an urgent response to climate change. If Aotearoa New Zealand is to meet its emission reduction targets by 2030 and 2050, then the electricity sector will need to produce and transmit ~70% more renewable electricity than it does now. This amount is largely accepted as the base case, with further opportunities to electrify hard-to-abate sectors such as aviation or using e-fuels. The sector needs to accelerate production and transmission and keep it up for decades.

In doing so, however, we need to ensure the electricity market and the power system delivers reliable, low-cost electricity. If consumers across the economy do not have confidence that electricity supply will be consistently affordable and reliable, they will not transition away from other sources of energy - and the opportunity to decarbonise our economy in the least-cost manner will be lost.

This requires considerable urgency in ensuring we have our policy and regulatory settings right – to ensure the market is well-placed to respond to the challenge through efficient wholesale market design that incentivises the right amount and mix of generation capacity; that regulated network businesses can invest in a way that balances affordability with the need to build ahead of demand; and industry regulators have the right roles and responsibilities and are sufficiently well funded to progress reform at pace. The interdependencies across portfolios need to be recognised and addressed with a particular focus on the importance of the consenting and property rights regime for the energy transition.

³⁰ [Connection enquiry information | Transpower](#)

³¹ [Envision spatial tools | Transpower](#)

³² See footnote [30]

Part 5: Whole-of-system considerations

62. To what extent should wholesale, transmission, distribution or retail electricity pricing be influenced by objectives beyond the (affordability-related) efficiencies achieved by cost-reflective pricing, such as sustainability, or equity?

There is existing precedent in other sectors for pricing principles that may deviate from pure efficiency objectives. For example, Part 6 of the Telecommunications Act includes requirements for geographically averaged pricing for fibre services. The Water Services Legislation Bill only allows different groups of consumers to be charged differently if “those groups receive different levels or types of services” or “the cost of providing services to those groups is different” and requires that “charges should be simple, transparent and easy for consumers to understand”.

63. Are the current objectives for the system’s regulators set in law (generally focusing on economic efficiency) appropriate, or should these also include more focussed objectives of equity and/or affordability?

Refer to our response to question 40.