



Submission of PowerNet Limited

To the Ministry of Business, Innovation and Employment

On Measures for Transition to an Expanded and Highly Renewable Electricity System

2 November 2023

Introduction

1. PowerNet Limited (PowerNet) appreciates the opportunity to make a submission to the Ministry of Business, Innovation and Employment (the Ministry) on Measures for Transition to an Extended and Highly Renewable Electricity System.
2. PowerNet is an electricity management company with its head office based in Invercargill. It is a joint venture company, owned (50/50) by Electricity Invercargill Limited (EIL) and The Power Company Limited (TPCL). This submission is supported by EIL, TPCL, and OtagoNet Joint Venture (OJV) and we acknowledge this is an issues paper seeking feedback to determine options for the future.
3. EIL and TPCL established PowerNet in 1994 to achieve economies of scale through integrated network management across the Southern region's Electricity Distribution Businesses (EDBs). PowerNet manages the non-exempt EDBs of EIL and OJV, the exempt EDB of TPCL, and the non-grid connected Stewart Island Electric Supply Authority (SIESA).
4. PowerNet manages an asset base and investments in excess of NZ\$1 billion. The aggregated electricity distribution asset base managed by PowerNet is the fourth largest in New Zealand. It provides services to over 75,000 customers through more than 14,200 circuit kilometres. In addition to EIL operating in Invercargill and Bluff, TPCL operates in Southland and West Otago, OJV in the rural and coastal Otago region that surrounds Dunedin City, Lakeland Network (LNL) in the Frankton, Cromwell and Wānaka regions, and SIESA on Stewart Island.
5. PowerNet has long-term management agreements in place with EIL, TPCL, OJV and LNL. With the benefit of integrated business management systems in place, PowerNet has a core purpose and expertise in asset management capability and delivering operating efficiencies and a sustainable network for the future of the EDBs it manages.
6. Alongside our own submission, PowerNet supports the Electricity Networks Aotearoa (ENA) submission in principle. Our submission reinforces some of the key points made in the ENA submission and addresses where the networks PowerNet manage wish to highlight or emphasise issues. This is not intended however to lessen the relevance or emphasis of any of the points in the ENA submission.

Customer service is important to us at PowerNet. If for any reason, we do not meet your expectations we would like the opportunity to work through a solution with you, please call our office on 03 2111899. If we are unable to resolve your concern, there is a free and independent resolution service available through Utilities Disputes Limited www.udl.co.nz

7. PowerNet also supports aspirations to reach net zero emissions that are not cost prohibitive. We acknowledge the important role distribution networks will play in supporting New Zealand's transition to a low emissions economy.

Key points

Networks for the Future

8. New Zealand needs to do more if it is to reach emission and renewable energy targets. At our current rate of change we will be short of what action is required to have sufficient impact on our own, and global climate change targets¹.
9. PowerNet agrees that the rate and scale of change in the electricity industry has posed a challenge to the efficient investment required to meet demand and forecast growth. It will be increasingly important for flexibility within the regulations to allow for the necessary investment and demand focused risk.
10. Ensuring modernization of the grid is crucial for accommodating renewable energy sources, enhancing grid resilience, and improving energy efficiency. There will need to be a balance struck to ensure that any incentives are appropriate and mitigate risk for electricity distributors that enable the necessary infrastructure improvements to be undertaken.
11. Alongside this, cost reflectiveness, cost allocation and equity are important factors to consider. PowerNet views that while spreading connection costs can lower barriers for customers to connect, it is important to ensure that costs are allocated fairly and do not disadvantage or disproportionately burden those who can least afford it, or those who are not getting any or little benefit from that investment.
12. It is critical that customers are exposed to cost reflective pricing and PowerNet has developed significant cost differentials into its managed networks' line pricing to incentivise efficient investment in DER and use of networks. While the paper acknowledges other EDBs also have developed pricing differentials there is little evidence retailers are reflecting these in their own pricing. It would appear incentives for retailers to manage input costs are insufficient to achieve cost reflective pricing that will enable flexibility services to develop efficiently, and regulatory intervention may be necessary.
13. PowerNet advocates for the swift reconciliation of smart meter data access. Without access to this data, there is little ability to develop the congestion monitoring required to determine network capacity constraints and areas for understanding the necessary development paths. The lack of data in this space has the potential to lead to poor investment decisions, or a lack of investment due to a deficit in quantifiable data restricting the investment in the networks that is required.
14. The electrification and decarbonisation of New Zealand will come at considerable cost and require accelerated innovation. Ensuring there is a supportive environment for efficient and effective network investment, and continued affordability for consumers will require careful coordination and facilitation across regulators and industry participants.

¹ <https://climateactiontracker.org/countries/new-zealand/>

Focus on sustainability limited

15. PowerNet's view is that there is greater focus currently placed on (low cost) efficient service provision, which may limit and/or discourage investments that might deliver sustainability benefits; the ultimate and long-term goal of New Zealand's drive for renewable energy generation and net zero emissions.
16. For a fit for purpose network, electricity distribution must take into consideration all aspects of an efficient network, which include all wellbeing outcomes of social, cultural, economic, and environmental wellbeing. Regulations should have agility to allow EDB's to invest in more sustainably resilient, secure, and reliable networks that recognise reduced diversity of electrified energy consumption and are less based on the traditional model of economic efficiency. This means that aligning regulatory settings to historical trends may not align with the significant investment required for the energy transition. The regulatory environment should reflect the changing energy landscape and need for a more modern, resilient, and sustainable grid infrastructure.
17. PowerNet manages both non-exempt price-quality regulated and exempt networks. Our experience to date is that the demand response through the exempt EDB would not have been possible with the rigid regulations placed on the non-exempt part of the sector. Non-exempt EDBs would have been disincentivised to invest and enter competitive markets for industry growth.
18. To date the vast majority of the electricity industry has exhibited sound judgement in investing in their networks and delivering a good standard of maintenance and upgrading, alongside growth and renewal. There is increasing risk that, similar to other infrastructure entities such as waters and road controlling agencies, constrained investment capability, or poorly planned investment due to a lack of credible data in consumer behaviour could result in ageing infrastructure and networks that are not fit for purpose or provide a sub optimally cost-effective service.
19. Given the significant changes that will be needed on the grid identified by Transpower to ensure the successful electrification of New Zealand in the coming decades, PowerNet knows the importance of understanding where to invest and in which ways to invest with long-term assets. This will become increasingly crucial for the intergenerational sustainability and security of electricity supply.

Regulated expenditure

20. The current five-year period of regulated expenditure is problematic. With increasing uncertainty, step changes, and the recognised rate of change, ensuring the regulatory regime is fit-for-purpose becomes increasingly important.

21. PowerNet acknowledges that reopeners are available, whereby allowing changes to be made to the five-year plan, however, they are costly, slow and resource hungry to engage in. Decarbonisation customers want to consider a variety of options and expect prompt decisions and turnarounds. The regulatory regime is not conducive to their needs. Allowing more flexible assessments and adjustments to regulated expenditure would allow for the adaptation and evolution of the energy industry that is required as we transition to a more renewable electricity system.
22. The five-year reset cycle and seven-year input methodologies review process is potentially leading to a set of rules that when applied could be 12 years old in some circumstances. This has effectively become too long in the planning cycle for EDB's; however, this should be tempered with ensuring that investment is not reactionary to trends grounded in insufficient data. This goes together with ensuring that smart meter data is accessible to help determine consumer patterns of behaviour and therefore allow for future growth based on demand and need.
23. Any reduced timeframe for regulatory expenditure would also need to be balanced with the resources required to satisfactorily complete the planning process, and not place undue administrative burden on EDB's to achieve a shorter timeframe. Alignment of the input methodology review period and price quality reset will provide a more current regime to deal with sector changes.

Industry resources

24. PowerNet, like many others throughout New Zealand, both within the electricity sector and broader, needs to actively manage the challenges around both recruiting and retaining industry resource and is actively managing this, especially with the current ageing workforce challenges. While people resources provide particular solutions, this can and will be complemented with seeking innovative solutions to fill the capacity and resourcing required for the transition to a decarbonised and electrified New Zealand. The current skills shortage in the industry is mirrored overseas and results in competition for resources domestically and globally.
25. PowerNet has recently begun the process of recruiting line staff from the Philippines to meet the basic demands of growth within the networks we manage, and to meet the current demand reflected through our approved Asset Management Plan (AMP). Additionally, PowerNet has an active domestic recruitment approach, including qualified and trainee intakes. We are cognisant that this demand will only grow, and our aging skilled work force will need to be replaced faster than we have had to historically, however we understand the challenges ahead and believe resourcing for decarbonisation and electrification can and will occur with the right strategies deployed.
26. The challenge for industry resources is not limited to field staff, whereby the foreseeable increase in smart technology will see an increased need in cyber security alone, alongside an overall expansion in the requirement for engineering and corporate functions to plan for and support the field-based operations. Supplementing with external resource is an option, but if the resource is required permanently, it is better to bring that resource into the business permanently.

27. The challenges facing the industry for capacity and skill base are not insignificant. The projected increase in the grid, followed by demand for distribution (the accelerated scale and volume of new connections) will place increasing pressure on EDB's such as PowerNet to continue to drive efficiencies and ensure there are innovative solutions to how we deal with this issue. Ensuring there is sufficient flexibility in the regulatory regime to allow for this will be paramount to the success of New Zealand's strive for net zero emissions, decarbonisation goals and electrification. This regulatory regime is not limited to industry specific and extends to areas such as immigration settings.

Lack of coordinated oversight for the Electricity sector

28. PowerNet is concerned that there is a systemic lack of coordinated oversight for the electricity industry, and with the rate of change occurring there is need for an all of system review across multiple agencies (MBIE, Commerce Commission, Electricity Authority). By way of example, recent requests for information and other submissions by the various Government agencies indicates this lack of co-ordination.

29. Particularly concerning is that in completing this submission PowerNet and other submitters are providing the same feedback to many similar questions from other regulatory consultations. Some critical issues have been identified and communicated for some time (and repeated in this submission) but are not being responded to effectively by regulators.

30. In addition, for PowerNet to have regulatory certainty in planning and executing long-term investments effectively there needs to be assurance that there is stability (with the appropriate flexibility) in regulatory change. PowerNet would seek assurance that Government agencies involved in the regulation and transformation of the electricity industry are collaborating appropriately, and sharing the information being gathered en masse and at pace from the sector, to deliver informed policy settings and robust regulations for the industry.

Other general comments

31. The Ministries' issues paper identifies a number of models from overseas to consider for the future transition of the electricity needs in New Zealand. PowerNet would encourage the Ministry to be prepared to follow lessons and opportunities from overseas regimes with due industry consultation. While New Zealand does have some unique factors, we do not have the luxury of time and unlimited resources, and it would be short-sighted to disregard models working well in other countries that might be appropriately adapted to suit the New Zealand environment.

32. PowerNet provides a unique perspective, in that we manage both exempt and non-exempt EDBs. We are able to compare the differences this creates and better understand the challenges and opportunities of the regulatory environment. We have relevant experience of operating within the exempt and non-exempt frameworks, especially with current decarbonisation occurring in our region. It is explicitly clear to us that the settings for exempt EDBs are a lot more conducive to meeting the needs of customers and the goals of decarbonising and electrifying the New Zealand economy. We are of the view that the current regulatory settings for non-exempt EDBs are inhibiting this transition. We are happy to provide further relevant examples of this, noting we have been doing so over the past two years.
33. PowerNet also has a number of larger commercial contracts. Each of these is bespoke and responds to the individual needs of the customer for their own electrification requirements. Maintaining this flexibility is important to PowerNet to ensure we continue to meet the needs of our network consumers.
34. The PowerNet managed networks cover a vast area of Southern New Zealand. We maintain the second largest pole population in the country and operate under a network management business model managing multiple EDBs. We are committed to diversification and growth and have vision to invest in renewable energy for a sustainable future.
35. We have provided more detailed responses below to several of the questions posed by the Ministry in the issues paper released. We would welcome any opportunity to discuss these issues further with the Ministry should the opportunity arise.

Appendix 1

Part 1: Growing Renewable Generation	
4	<p>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?</p>
	<p>The phase down of fossil fuelled peaking plant is a situation that will need to be carefully managed. The lack of certainty around having a reliably procurable fuel for power generation as required creates significant new risk to be managed.</p> <p>PowerNet believes New Zealand must ensure flexible DER potential is optimised to manage short term firming and dispatch requirements and save running of less economic or non-renewable generation for critical capacity firming applications (whatever resource is determined for these applications). This will require DER owners to be enabled and incentivised to efficiently access markets that deliver capacity/energy firming so that these resources contribute to an optimally economic approach to firming. Markets will need to coordinate the best uses of flexibility and allow for realising parallel value streams where there are practical benefits to the electricity system.</p>
5	<p>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?</p>
	<p>Yes, retail pricing to reflect true distribution network costs and other retailer cost inputs – this will likely create greater incentives to invest in storage scaling up the available resource in New Zealand. This should be considered to have value beyond the current understanding of customers who may not immediately appreciate more complex pricing but would have long term benefits in incentivising efficient behaviour.</p> <p>Standards to support smart services readiness are important to ensure interoperability of storage so that any aggregator offering efficient services that maximise value of storage devices may effectively control these DER.</p>
6	<p>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? 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.</p>
	<p>Any rules should be applied generally, but in the context of additional targeted measures put in place to lessen reliance or remove fossil fuel consumption from electricity supply e.g. ETS and other interventions against non-renewables applied at the appropriate time or pace.</p>
7	<p>If you answered yes to question 6 above, what are the issues and risks with this approach? How could these risks and issues be addressed?</p>
	<p>Risk can generally be minimised by ensuring cost reflectivity of services except for targeted interventions that disincentivise fossil fuel emissions as directly as possible. This approach needs to be supported by an understanding of the implications of any interventions undertaken to avoid unanticipated shocks from sudden technology withdrawn prior to suitable renewable alternatives being made available.</p>
15	<p>What types of commercial arrangements for demand response are you aware of that are working well to support industrial demand response?</p>
	<p>Simply Energy is working with industrial customers to facilitate entry to the instantaneous reserves market and operates reserves offering services on the customers' behalf.</p> <p>Transpower's flex point provides demand response for grid management.</p> <p>Customers may be connected to networks with 'N security' i.e. do not have additional automatic backup supplies installed in line with traditional one-size fits all standards. Alternatively customers may operate with SPS (Special Protection System) arrangements in place meaning customers may accept an automated outage in response to contingent events</p>

	during periods of constrained contingent capacity to offset upgrade costs. These arrangements are for local network security purposes.
16	What new measures could be developed to encourage large industrial users, distributors and/or retailers to support large-scale flexibility?
	Measures that deliver sustainable incentives commensurate with market needs, and that reduces complexity and educational barriers to entry and operation would be valuable and encourage potential flexibility providers. Making incentives available in near term is likely to help early development of flexibility services solutions in preparation for the coming greater penetration of DER technology. Such solutions may be scaled with better certainty on demand for services and capability of technologies.
17	Do you have any views on additional mechanisms that could be developed to provide more information and certainty to industry participants?
	Indications of potential returns and forecasting of prices in likely scenarios would be beneficial. Potential flexibility providers may show increased interest if value could be more readily quantified. For those that invest time to understand and see value may still be concerned about the risk of diminished future returns as new technology is installed through the energy decarbonisation transition. However, bounding the potential variations in pricing may be feasible and if so, would support confidence in developing flexibility.
Part 2: Competitive Markets – PowerNet have no specific feedback to provide	
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?
	PowerNet supports the ENA submission
19	Aside from increased market concentration of flexible generation, what other competition issues should be considered and why?
	PowerNet supports the ENA submission
20	What extra measures should or could be used to know whether the wholesale electricity market reflects workable competition, and if necessary, to identify solutions?
	PowerNet supports the ENA submission
21	Should structural changes be looked at now to address competition issues, in case they are needed with urgency if conduct measures prove inadequate?
	PowerNet supports the ENA submission
22	Is there a case for either vertical separation measures (generation from retail) or horizontal market separation measures (amending the geographic footprint of any gentailer) and, if so, what is this?
	PowerNet supports the ENA submission
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?
	PowerNet supports the ENA submission
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)?
	PowerNet supports the ENA submission
25	What extra measures around electricity market competition, if any, do you think the government should explore or develop?
	PowerNet supports the ENA submission

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?
	PowerNet supports the ENA submission
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?
	<p>Clearly the scale and pace of change has shifted increasing the challenge of efficient investment and therefore increasing the risk of getting it wrong. Risk increases with the increase in affordability and energy hardship challenges due to general economic impacts as well as specific increases in electricity system investments required. Inequity is likely to become an increased concern as affordability challenges arise as the consequences may be more severe for those in hardship.</p> <p>The risk associated with late flexibility services development investment can be expected to negatively impact affordability in a way that should be avoidable. Significant value attributed to flexibility services is associated with the avoidance or deferral of network upgrade expenditure and it should be expected that if flexibility services are not available in time, then EDBs will be forced to upgrade networks and pass on costs to consumers.</p> <p>Early investment can be expected to have a lower impact on affordability risk overall but should be distinguished from over-investment where forecasts predict greater growth than may arise leaving unutilised capacity, or under-investment where sequential upgrades require inefficient duplicated efforts to meet further unforeseen growth. Inefficient investment is a difficult risk to manage, especially around large commercial or industrial customers that may create large step changes in capacity requirements rather than the more incremental and forecastable growth from residential connections. This is especially difficult where customers provide late communication of intentions or make fast or reactionary decisions about their capacity requirements.</p>
28	Are there any additional actions needed to ensure enough focus and investment on maintaining a resilient national grid?
	<p>Standards to define resilience would be beneficial to provide confidence and consistency around delivering more resilient infrastructure. Response plans will be more critical as climate change shifts the frequency of severe events, customer expectations increase, and energy diversity is reduced with electrification. Standards again may inform not only infrastructure design strength but also response and recovery expectations to plan for. These standards must necessarily be developed understanding the balance of resilience improvements and the costs that customers are willing to pay for. Resilience standards may recognise priorities for critical supplies such as supplies to communications infrastructure and emergency responders.</p> <p>Standards may be developed by industry but endorsed by regulators.</p>
29	Do you agree we have identified the biggest issues with existing regulation of electricity distribution networks?
	<p>Yes, agree that the network investment model to support the energy transition, removing barriers to connection for new demand, cost allocation to support network investment, and pricing signals to provide efficient use of networks are all issues with the existing regulation of electricity distribution networks.</p> <p>PowerNet note there are incentives in the regulatory regime to favour capital expenditure over operational expenditure. Default price-path capex allowances that include customer driven capex and which attract Incremental Rolling "Incentive" Scheme penalties need to be removed by the Commerce Commission in this fast changing/growing environment. Commerce Act and Part 4 amendments should have decarbonisation facilitation as an objective for the Commerce Commission.</p> <p>Regulation could support the open access sharing of data as an enabler of flexibility development. Metering data applications have grown beyond retailer reconciliation and access is holding up the efforts of many parties now wanting to develop new services for customers. Smart meter data could be made available to licensed parties e.g., those registered as electricity industry participants or having proven data security commitments etc. Regulation may also support the roll-out and adoption of smart meters to overcome customer</p>

	<p>resistance which is often the result of misinformation. This would help ensure that all customers can benefit from innovative services and that efficient network infrastructure build and operation can be maximised for the benefit of all.</p> <p>PowerNet considers pricing signalling issues to be largely driven by retailers repackaging the significant price incentives in line pricing of PowerNet managed networks. Retailers decide what prices customers are exposed to and, while there are exceptions, have typically not demonstrated any priority for reflecting distributor price signals when these have been developed which can lead to inefficient network capacity usage and congestion. This is consequently a barrier to distributors developing innovative pricing as there is a cost to developing pricing which is understood to have very little impact. There is also some risk to revenue where distributors have no control over potential step changes in consumption against variable (per kWh consumed) pricing. Retailers may continue to ignore distributor price signals or suddenly change pricing structures to reflect line charge differentials, whereas distributors would tend to 'phase in' pricing differentials.</p>
30	<p>Are there pressing issues related to the electricity distribution system where you think new measures should be looked at, aside from those highlighted in this document? How would you prioritise resolving these issues to best enable the energy transition?</p>
	<p>Equitable Access and Pricing: Ensuring that regulatory measures promote equitable access to electricity distribution networks and fair pricing for all consumers and market participants is essential. Gaps in these areas can lead to uneven access and pricing structures that may hinder the development of distributed energy resources (DERs) and limit competition in the energy market. Retailer pricing is a current barrier to the efficient development of flexibility services, and it does not appear competition or input cost incentives are sufficient to bring about cost reflective pricing with correct incentives for customer DER investment and consumption behaviours. Regulators need to carefully consider what interventions may be necessary to ensure customers are exposed to cost reflective pricing incentives that may drive the creation of value for both those that own DER and those that do not.</p> <p>Incentives for Grid Modernization: Regulatory gaps in incentivizing grid modernization and the integration of advanced technologies can be a concern. Modernizing the grid is crucial for accommodating renewable energy sources, enhancing grid resilience, and improving energy efficiency. A lack of incentives may deter electricity distributors from making necessary infrastructure upgrades.</p> <p>Addressing these areas of concern will be essential to create a robust and adaptive regulatory framework for growing electricity distribution networks in New Zealand while ensuring that the energy system is safe, efficient, and reliable.</p> <p>Smart meter data access must be dealt with swiftly to enable flexibility services to develop efficiently. This is prerequisite to developing congestion monitoring so that the value of flexibility for network capacity constraint management can be quantified and understood. With data at hand this will be a significant development path for EDBs ahead of being able to share congestion data with industry to enable flexibility services.</p> <p>PowerNet through its work with Smartco has obtained smart meter data for Electricity Invercargill and for The Power Company but is in the same position as other EDBs in not having smart meter data for OtagoNet. Therefore, PowerNet is very aware of the positive difference in services that are being developed for customers of networks where smart meter data is available to EDBs. These services include immediate benefits for network safety, reliability, and operation for customers ahead of the development of congestion monitoring and forecasting, and supporting traditional network planning.</p>
31	<p>Are the issues raised by electricity distributors in terms of how they are regulated real barriers to efficient network investment? Please give reasons for your answer. Is there enough scope to address these issues with the current ways distributors are regulated? If not, what steps would you suggest to address these issues?</p>
	<p>Yes, issues raised by electricity distributors are barriers to efficient network investment and the successful management of the energy transition in New Zealand.</p> <p>Regulatory Objectives and Sustainability Considerations: Current regulatory objectives focus on efficient service provision, potentially discouraging investments that deliver resilience and equitable decarbonisation. To address this, regulatory objectives should be updated to explicitly incorporate sustainability considerations outlined in the Climate Change Response</p>

	<p>Act 2002 (CCRA), fostering a supportive environment for investments in clean energy, grid resilience, and sustainability. Regulators should not be expected to interpret their ‘true’ objectives in contrast to regulatory objectives.</p> <p>Flexibility in Regulated Expenditure: The inflexibility of regulated expenditure over a five-year period is problematic, especially in the face of increasing uncertainty and changes during the energy transition. While reopeners are available, they may be cumbersome and costly to initiate. To address this, regulators should consider allowing more frequent assessments and adjustments of regulated expenditure to adapt to evolving energy market dynamics and technology advancements.</p> <p>Skewed Regulatory Incentives: To address this, regulatory frameworks should be rebalanced to ensure that investments in opex, including non-network solutions for flexibility, are encouraged equally and appropriately rewarded to maximize cost-efficiency.</p> <p>Historically Driven Regulatory Settings: Regulatory settings based on historical trends are unlikely to align with the significant investment required for the energy transition. Regulators should reevaluate and update these settings to reflect the changing energy landscape and the need for modern, resilient, and sustainable grid infrastructure. Incremental Rolling “Incentive” Scheme penalties need to be removed by the Commerce Commission in this fast changing/growing environment. Commerce Act and Part 4 amendments should have decarbonisation facilitation as an objective for the Commerce Commission.</p> <p>The five-year reset cycle and seven-year input methodologies review process is potentially leading to a set of rules that when applied could be 12 years old in some circumstances. This has become too long in the planning cycle for EDB’s. The speed and scale of new connections that PowerNet are now dealing with, driven by electrification and decarbonisation policy and incentives, was not foreseen at the start of the current planning cycle and is challenging to respond to.</p> <p>Customised Price-Path or reopeners are resource intensive undertakings for EDBs so are not an efficient means to deal with issues that are nationwide and may be better dealt with improved regulatory design to allow for appropriate spending to support decarbonisation.</p> <p>To address these issues effectively, regulators should engage in a coordinated review of the regulatory framework. This includes revising regulatory objectives, enhancing flexibility in regulated expenditure, and rebalancing regulatory incentives to align with sustainability goals and technological advancements. Stakeholder collaboration is crucial throughout the process to ensure that regulatory changes reflect the diverse needs and perspectives of the energy sector. Moreover, regulators should actively monitor and assess regulatory settings to adapt to emerging developments and maintain efficient, adaptive, and sustainable electricity distribution networks in New Zealand.</p>
32	<p>Are there other regulatory or practical barriers to efficient network investment by electricity distributors that should be thought about for the future?</p>
	<p>In addition to the barriers above, there are other regulatory and practical barriers to efficient network investment by electricity distributors that should be considered for the future. These include:</p> <ol style="list-style-type: none"> 1. Interconnection and Grid Access: Challenges in securing timely and affordable access to the national grid can hinder efficient investment by distributors. Ensuring fair and transparent interconnection processes and cost allocation mechanisms is crucial. 2. Technological Integration: The integration of new technologies like electric vehicles, energy storage, and distributed energy resources (DERs) into the grid can present regulatory challenges. Clear guidelines and standards for technology integration are needed to ensure that investments align with future grid requirements. PowerNet understand MBIE is considering the regulated voltage ranges that must be maintained for customers connected to LV networks. Adopting similar standards to Australia in this regard makes sense as we are closely aligned with appliance and installation standards. In terms of bang for buck, increasing the range as much as tolerable for consumer appliances is a significant opportunity that would support electrification and improve investment efficiency significantly for very little cost. 3. Cybersecurity and Data Privacy: As electricity networks become more digital, cybersecurity and data privacy become paramount. Regulatory barriers to

	<p>implementing robust cybersecurity measures and protecting customer data can pose challenges to efficient investments.</p> <ol style="list-style-type: none"> 4. Customer Engagement and Demand-Side Management: Distributors face barriers in effectively engaging customers and implementing demand-side management programs. Regulatory incentives and mechanisms to encourage customer participation and demand response are essential for efficient network investment. 5. Resilience and Climate Adaptation: Climate change-related disruptions, such as extreme weather events, require enhanced grid resilience and adaptation measures. Regulatory frameworks should encourage investments in grid hardening, redundancy, and disaster preparedness. 6. Environmental Compliance: Meeting environmental and sustainability goals may require substantial investments. Ensuring that regulatory frameworks provide incentives for investments in clean energy and emissions reduction is essential. 7. Regulatory Certainty: Distributors require regulatory certainty to plan and execute long-term investments effectively. Frequent regulatory changes and uncertainties can hinder efficient capital allocation. 8. Price signals: PowerNet believe it is in customers best interest to have price signals that drive efficient behaviour and investment. Residential customers will react slowly as their decisions will be tied to their ability to invest savings in DER such as solar or batteries. Pricing signals would need to be delivered well ahead of the need arising and sustained over time to indicate as sustainable for customer response. PowerNet is concerned that retailer electricity pricing may not respond to price differential incentives that EDBs develop in their line charges. Retailers have counter incentives that may prove greater than their interest in managing input costs driven by what customers react to. Educating customers to understand the long-term value of the flexibility services that they may offer is a significant challenge (it may be too complex for a typical consumer to take enough interest to understand). Retailers potentially expose themselves to risk of customer switching if they create complex pricing that customers don't want and therefore may avoid being the first mover. A coordinated response is also unlikely due to dangers of anti-competitive collaboration perceptions. Retailers also traditionally manage cost risk on customers' behalf and the value they offer may reduce as they evolve toward passing through input costs in pursuit of more cost reflective pricing. For these reasons PowerNet believe intervention around retail electricity pricing may be necessary so that customers are consistently expose to price signals that incentivise the most efficient investment and consumption behaviour. <p>Addressing these regulatory and practical barriers in future planning and regulatory frameworks is essential to ensure that electricity distributors can make efficient investments that support a resilient, sustainable, and adaptable energy infrastructure in New Zealand. It requires ongoing collaboration among regulators, industry stakeholders, and policymakers to create a conducive environment for grid modernization and the energy transition.</p>
33	<p>What are your views on the connection costs electricity distributors charge for accessing their networks? Are connection costs unnecessarily high and not reflective of underlying costs, or not? If they are, why do you think this is occurring?</p>
	<p>PowerNet works hard to deliver multiple options for connection cost and service trade-offs to meet customer expectations. PowerNet has seen large volumes of decarbonisation connections and has not seen evidence of any issue with connection costs raised by customers.</p> <p>PowerNet believe cost reflective pricing that avoids cross-subsidisation will lead to the most cost-efficient outcomes for customers overall and avoids inequity issues. Any financial support for customer connections should be done explicitly from government funding that recognises the need for targeted support for decarbonisation developments.</p> <p>Connection costs for accessing electricity distribution networks may currently be too low, which could jeopardize the long-term sustainability and reliability of these critical infrastructure systems. Low connection costs may lead to distributor underinvestment in the maintenance, upgrade, and expansion of distribution networks, posing a risk to grid reliability.</p>

	<p>As demand for electricity grows and renewable energy integration becomes more prevalent, the distribution infrastructure must be adequately equipped to handle these changes. Inadequate funding through low connection charges can result in an aging and less reliable grid, with potentially increased downtime and service interruptions. If instead costs are subsidised by other customers there is the risk of creating inequity issues and inefficiencies through non-cost reflective pricing. Furthermore, low connection costs might deter innovation and discourage the adoption of distributed energy resources (DERs). Smaller energy providers and clean energy projects often rely on equitable connection charges to enter the market and compete with larger, traditional utilities. When connection costs are too low, these innovative players may face financial challenges and may be unable to invest in advanced technologies and sustainable energy solutions.</p>
34	<p>If you think there are issues with the cost of connecting to distribution networks, how can government deliver solutions to these issues?</p>
	<p>Addressing the challenges related to the cost of connecting to distribution networks and facilitating the rollout of EV charging infrastructure and decarbonization projects, such as process heat electrification, requires a collaborative approach involving government agencies, regulators, electricity distributors and other industry stakeholders including new technology and service (e.g. flexibility) providers.</p> <ol style="list-style-type: none"> 1. Cost Allocation and Equity: While spreading connection costs can lower barriers for connecting customers, it's important to ensure that costs are allocated fairly and don't disproportionately burden those who can least afford it and have little to no benefit. Regulatory settings should strike a balance between encouraging decarbonization and ensuring affordability. 2. Increased Transparency: To address the lack of transparency in connection costs, regulators and distribution businesses should collaborate to provide clearer pricing structures and descriptions. This transparency can help customers make informed decisions and promote competition in the provision of connection assets. 3. Streamlined Process: To reduce delays in the connection process, standardization of procedures and timelines is crucial. Regional inconsistency, delays in responding to connection requests, and complexities related to infrastructure investments must be minimized. This could involve setting consistent standards and practices across different distribution businesses and local councils. 4. Contestability for Connection Assets: Increasing contestability for the provision of connection assets can help reduce inefficient costs. Exploring options for access regimes that specify who can perform connection work and the equipment that can be used can promote efficient and cost-effective connections. 5. Customer Flexibility: Encourage distribution businesses to offer flexible solutions for customers who can provide distributed flexibility from their own operations or accept lower reliability standards for their network connection. Bespoke solutions may be required for such customers. 6. Government Funding: Continue government co-funding initiatives, such as the GIDI Fund and the Low Emissions Transport Fund, to stimulate private sector investment in EV charging infrastructure and decarbonization projects. 7. Infrastructure Certainty: Provide greater certainty to charging providers, investors, and connecting customers regarding costs, timelines, and the optimal placement of EV infrastructure. Pilot programs and strategies, as done by EECA, can help with this goal. 8. Stakeholder Engagement: Engage with stakeholders, including public EV charger investors, decarbonization project applicants, and distribution businesses, to ensure that regulatory changes align with their needs and realities. <p>Overall, the government can play a central role in coordinating and facilitating these solutions, working closely with regulators and industry players to create a supportive environment for efficient network investment and the electrification of transportation and process heat in New Zealand. This can help meet emission reduction targets and advance the transition to a zero-carbon future.</p>

	<p>PowerNet does not consider there is any significant issue with the cost of connecting to distribution networks overall. It is recognised that upfront costs can be significant however it is appropriate that connecting customers meet these costs to ensure cost reflectivity and consistent standards. Again, any financial support for customer connections should be done explicitly from government funding that recognises the need for targeted support for decarbonisation developments. It is noted distributed generation connections pay only the incremental cost of connection which could be interpreted as a form of subsidisation paid by existing consumption customers.</p> <p>The paper floats the idea of creating competition for providing connections. This does not recognise the resource challenge that is a reality of the electricity industry in New Zealand and globally. There are limited options to compete for this work. PowerNet regularly tests the market where it sees benefit in doing so and is driving new mechanisms for improving efficiencies where internal field staff are used. While people resources provide particular solutions, this can and will be complemented with seeking innovative solutions to fill the capacity and resourcing required for the transition to a decarbonised and electrified New Zealand.</p>
35	<p>Would applying the pricing principles in Part 6 of the Code to new load connections help with any connection challenges faced by public EV chargers and process heat customers? Are there other approaches that could be better?</p>
	<p>The Electricity Authority could explore the implementation of an access regime similar to Part 6 of the Code for new electrified load connections.</p> <p>It should be noted that the prescribed maximum fees in Part 6 of the Code are out of date and are not an accurate representation of the cost of assessing DG connections, resulting in cross subsidisation from other EDB customers. These fees should be updated to a cost-effective level and then adjusted by CPI annually and include a fee per MW for connections greater than 1MW.</p> <p>Additionally, PowerNet would advise caution with this approach as flexibility to cater to individual customers' needs has been critical in reaching satisfactory outcomes for large decarbonisation customers.</p>
36	<p>Are there any challenges with connecting distributed generation (rather than load customers) to distribution networks?</p>
	<p>The Electricity Safety Regulations do not align with latest versions of design standards and inverters (i.e. 4777.2 2020). Having up-to-date and aligned regulations and standards would avoid much of the confusion and enforceability issues seen to date.</p> <p>Part 6 of the code also requires revision to ensure controlled fees, timeframes and process fit the current and increasing speed and scale of connections that the networks are now seeing.</p>
37	<p>Are there different cost allocation models addressing first mover disadvantage (when connecting to distribution networks) which the Electricity Authority should explore, potentially in conjunction with the Commerce Commission?</p>
	<p>Addressing the first mover disadvantage in relation to connecting to distribution networks is a crucial consideration, especially in the context of decarbonization and electrification initiatives. Different cost allocation models can be explored, either independently or in collaboration with the Commerce Commission, to mitigate this disadvantage. Here are some potential models that the Electricity Authority could investigate:</p> <ol style="list-style-type: none"> 1. Government Underwriting: As suggested, the government could temporarily underwrite the costs associated with anticipatory capacity until future customers connect. This approach can help reduce the upfront financial burden on first movers, promoting timely investments in decarbonization projects and renewable generation. We believe that this would be the most appropriate model. 2. Delayed Cost Recovery: To allocate more of the anticipatory investment cost to future customers who will use the capacity, the Commission can consider delaying the recovery of asset costs. This approach would make the upfront cost less significant for initial investors. However, it's essential to balance this with the need for distribution businesses to finance future investments. 3. Directive Pricing Regulatory Model: Exploring a directive pricing regulatory model, similar to practices in other jurisdictions, can offer more predictability for investors.

	<p>Such a model could include fixed connection costs for different scales of connections, standardized distribution pricing formulas, and a prescriptive approach for ongoing distribution charges. However, implementing this model would require a significant shift in regulatory practices.</p> <ol style="list-style-type: none"> 4. Renewable Energy Zones: The formation of Renewable Energy Zones, including distribution networks, can provide a platform for coordinated investment in anticipatory capacity. By including distribution networks within these zones, it may be possible to align capacity investments with regional renewable energy goals. 5. Weighted Recovery: The Commission could consider a model where the recovery of asset costs is weighted toward the end of the asset's life. This approach could make the upfront cost less significant for investors, although it may impact the ability of distribution businesses to finance future investments. 6. Government Funding: PowerNet would support the Government funding investment in anticipatory capacity model particularly for large upgrades or new loads for decarbonisation. A model similar to the Crown Fibre Holdings approach used for the rollout of the ultra-fast broadband throughout New Zealand could be used. <p>Each of these models comes with its own advantages and challenges. It is crucial for the Electricity Authority and the Commerce Commission to carefully assess which combination of models and approaches is most suitable for addressing the first mover disadvantage in New Zealand. Stakeholder engagement, regulatory insights, and a focus on the unique context of the energy market are key to finding effective solutions to support decarbonization and renewable generation initiatives.</p>
38	<p>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?</p>
	<p>PowerNet would reiterate that an immediate focus should now shift to achieving retailer pass through or reflection of EDB price signals. PowerNet has done what the EA has requested and has designed significant price differentials into its managed networks' line pricing. This is designed to incentivise customers opting into load management schemes and shifting consumption behaviour to target off peak demand periods. This should ultimately lead to efficient use of the network, efficient investment in DER and flexibility products and ultimately to a more cost-efficient network service to customers.</p> <p>However, PowerNet has seen little evidence of retailers reflecting these price signals and therefore customers are not exposed to the incentives PowerNet has tried to create. Furthermore, PowerNet's historic pricing over many years has included very strong day vs night pricing differentials which were not reflected in retailer pricing. The paper illustrates that most of the EDBs do have incentives in their pricing. If retailers require the whole country to shift to somewhat consistent pricing to reflect price signals to customers, it does not bode well for pricing granularity the recognises diversity of flexibility requirements across the country.</p> <p>PowerNet does not believe there is sufficient incentive for retailers to manage distribution pass-through costs. PowerNet support EA's option to continue offering guidance notes and scorecards and generally working closer with EDBs to understand the issues and solutions associated with distribution pricing. This is further discussed above and in PowerNet's feedback to the EAs pricing consultation which MBIE may reference.</p> <p>Flexibility and adaptability are essential in an industry that is continually evolving. Striking the right balance between regulatory oversight and market-driven solutions is key to ensuring efficiency, innovation, and consumer choice in the electricity sector. Distributors need to be flexible in their pricing approaches to enable them to work with decarbonising or generation building customers. This flexibility can make the difference in achieving favourable business case for customers.</p> <p>If the EA is considering a more prescriptive regulation of electricity distributors pricing it should consider the following:</p>

	<ol style="list-style-type: none"> 1. Market Flexibility: A more prescriptive pricing regime can limit market flexibility. Electricity markets are dynamic, and pricing structures need to adapt to changes in technology, customer preferences, and market conditions. 2. Inhibits Efficiency: One of the advantages of a less prescriptive approach is that it allows distribution businesses to find the most efficient ways to operate and allocate costs. A more flexible regulatory framework can encourage distributors to seek cost-effective solutions, ultimately benefiting consumers through lower costs. 3. Complexity: Highly prescriptive pricing models can be overly complex, making it challenging for distribution businesses to understand and comply with regulatory requirements. This complexity can result in regulatory compliance costs that are ultimately borne by consumers. 4. One-Size-Fits-All Approach: Prescriptive pricing regulations often employ a one-size-fits-all approach, applying the same pricing structure to all distribution businesses. This approach may not account for regional differences, variations in network infrastructure, or unique market conditions in different parts of the country. 5. Slower Regulatory Adaptation: Highly prescriptive regulations can be slow to adapt to changing circumstances. In fast-moving industries like energy, this can be a significant drawback. When new technologies or market dynamics emerge, the regulatory framework may not keep pace. 6. Reduces Incentives for Innovation: Prescriptive regulations can reduce the incentives for distribution businesses to innovate in pricing structures or explore new, more efficient approaches. A more flexible framework can incentivize businesses to develop novel solutions that benefit consumers and the grid. 7. Risk of Overregulation: Excessive prescription can lead to overregulation, resulting in a burdensome regulatory environment. This can discourage investment in the sector and lead to unintended consequences, such as reduced service quality. 8. Cost Shifting: Overly prescriptive pricing may not adequately address cost shifting. Distribution businesses could respond to prescriptive rules by shifting costs to other areas or by finding ways to recover lost revenue, potentially affecting consumers in other ways. 9. Consumer Choice: A more flexible approach allows consumers to choose from a variety of pricing options that may better suit their needs. Prescriptive regulations could limit the diversity of pricing structures available to consumers.
39	<p>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?</p>
	<p>The coordination between the Electricity Authority and the Commerce Commission is crucial when regulating electricity distributors. Efficient and effective regulation depends on clear and harmonized approaches between these entities. PowerNet shares the concern about the existing arrangements not supporting enough coordination. The following are some potential actions that can enhance the co-ordination:</p> <ol style="list-style-type: none"> 1. Single Regulatory Body: As mentioned, some stakeholders have expressed concerns about the complexity of responsibilities between the Electricity Authority and the Commerce Commission. Consideration could be given to streamlining regulatory functions by establishing a single regulatory body responsible for all aspects of electricity regulation. This can minimize conflicting signals and improve the overall coherence of the regulatory framework. 2. Joint Working Groups: The Electricity Authority and the Commerce Commission can establish joint working groups or committees to address specific regulatory issues collaboratively. These groups can foster greater coordination, share expertise, and ensure that regulatory approaches align with the overall goals of the energy sector, including efficiency, affordability, and sustainability. 3. Clear Memoranda of Understanding: Both entities can develop clear memoranda of understanding (MOUs) that outline their respective roles and responsibilities in electricity regulation. These MOUs can serve as a reference point for coordination efforts, ensuring that there is no overlap or contradiction in regulatory decisions. 4. Regular Consultation: Regular consultation between the Electricity Authority and the Commerce Commission can help identify potential areas of misalignment or conflicts

	<p>in regulatory approaches. This ongoing dialogue can lead to timely resolutions and better integration of regulatory practices.</p> <p>5. Common Objectives and Principles: Both entities should establish and adhere to a set of common objectives and principles for electricity regulation. These objectives can include promoting efficiency, affordability, and sustainability. Aligning on overarching goals can help minimize conflicting signals and guide regulatory decisions.</p> <p>6. Data Sharing and Collaboration: Enhancing data sharing and collaboration can improve regulatory oversight. Both entities can work together to collect, analyze, and share relevant data and market insights, fostering a more informed and coordinated approach to regulation.</p> <p>7. Transparency: Ensure that regulatory processes are transparent and open to public scrutiny. Public input and feedback can help identify areas where coordination can be improved. Transparency can also build trust in the regulatory process.</p> <p>8. Flexible Regulatory Framework: The regulatory framework should be flexible enough to adapt to changes in market conditions and emerging technologies. Both entities should work together to ensure that regulations can evolve in response to new challenges and opportunities.</p>
40	<p>Will the existing statutory objectives of the Electricity Authority and Commerce Commission adequately support key objectives for the energy transition?</p> <p>If the regulators are expected to support decarbonisation, then this should be explicit in their objectives. Current objectives are focused on service level and cost, and this does not capture the larger objective of decarbonisation which has become a critical issue to be managed directly. Regulators should not be expected to interpret their 'true' objectives in contrast to their regulatory objectives.</p>
41	<p>Should the Electricity Authority and/or the Commerce Commission have explicit objectives relating to emissions reduction targets and plans set out in law? If so,</p> <ul style="list-style-type: none"> • should those objectives be required to have equal weight to their existing objectives set in law? <p>Why and how might those objectives affect the regulators' activities?</p>
	PowerNet supports the ENA submission
42	<p>Should the Electricity Authority and/or the Commerce Commission have other new objectives set out in law and, if so, which and why?</p>
	PowerNet supports the ENA submission
43	<p>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)?</p>
	PowerNet supports the ENA submission
44	<p>If you answered yes to question 43, please explain why and indicate:</p> <ul style="list-style-type: none"> • 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.
	PowerNet supports the ENA submission
Part 4: Responsible Demand And Smarter Systems	
45	<p>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?</p>
	PowerNet sees that there is value in a centrally administered data exchange for service providers to access data that would facilitate efficient visibility of DER flexibility availability

	<p>and its potential value to a competitive market. This exchange would be open to parties that meet certain criteria designed to protect customer data from misuse. This would allow a standardised format for data storage, communication, and access response with the purpose of ensuring efficient country-wide access to information that would support DER value development through open competition. PowerNet has not developed a comprehensive or firm view on what a potential centrally administered data exchange would include.</p> <p>However, we determine it may include a DER registry that keeps for example, DER type, capacity and limitations around it's access set by the DER owners. It may be a requirement for service providers to update registry DER data once customers have opted into an agreement to have their DER devices controlled by the service provider. The central data exchange may also provide access to smart meter data which now has multiple uses beyond retailer reconciliation and therefore there should be equal access to any service provider. This would be a more efficient means to ensure competing parties can access consumption to understand the potential for DER flexibility management or to provide other data services to customers including valuable distribution network operational improvements (other than flexibility services) that EDBs are hoping to provide. Network congestion heatmaps or other data may also be communicated via a central exchange once these are sufficiently developed. It is likely too early to be starting up a trading platform at this stage although it would be interesting to understand what this might look like and preparing early is preferable than too late. Perhaps a trial may seek to better understand the opportunity, potential features and alternatives to understand the merits of a flexibility trading platform. This could allow an efficient design to develop and evolve before flexibility requirements scale up while helping stimulate flexibility provider engagement.</p> <p>A Government-led effort to define the future structure of a common digital energy infrastructure for trading distributed flexibility would undeniably foster coordinated action to increase the utilization of distributed flexibility resources within the energy system. Clarity and standardization are paramount in this context, as a well-defined framework ensures that all stakeholders, from energy producers to consumers and technology providers, share a common understanding of how distributed flexibility can be traded and integrated. This shared clarity serves as the foundation for market confidence, signalling the government's commitment to a dynamic distributed flexibility market. The assurance of a predictable and supportive regulatory environment encourages investment in technologies that facilitate flexibility, such as demand response programs, energy storage solutions, and advanced grid management systems.</p> <p>A government-defined structure promotes coordination and integration among various actors in the energy sector. Utilities, grid operators, and technology providers can align their efforts more effectively, enabling integration of distributed flexibility resources. Government leadership in shaping the structure of a common digital energy infrastructure can serve as a catalyst for the growth and effective utilization of distributed flexibility, aligning with the broader goals of modernizing the energy landscape and ensuring reliable access to sustainable energy resources.</p>
46	<p>Should central government see how demonstrations and innovation to help inform how trade of flexibility evolves in the New Zealand context, before providing direction to support trade of distributed flexibility? If yes, how else could government support the sector to collaborate and invest in digitalisation now?</p>
	<p>Innovators are forced to work with the situation at hand which does not optimally support the development of efficient flexibility services. These products may then not be fit for purpose when change is later implemented or will at least need to adapt so maintaining the status quo environment may create an inefficient development path for New Zealand. Some services may not get off the ground due to current inadequate regulatory settings or support.</p> <p>Solving the problem of establishing flexibility services for an efficient future electricity system is a multidimensional chicken and egg problem. It therefore is likely to require some intervention with an aspect of strategic design to bring about the necessary system that may then self-sustain dependant on regulatory settings.</p> <p>Obvious barriers need to be addressed early:</p>

	<ul style="list-style-type: none"> • Retailers need to be required to provide cost reflective pricing so that flexibility owners (and potential owners) are exposed to flexibility incentives and can assess and realise value for their DER investments. • Smart meter data should be available to all service providers so that distributors can progress congestion mapping and operating envelopes and others can look at flexibility development solutions. • Consideration of further data sharing and standardisation may also help stimulate the developing flexibility market.
47	<p>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?</p>
	<p>Collaboration is already very strong within the industry and good progress is being made. However, funding to support collaboration groups may allow access to specialist resources that may then be shared widely aiding progress and alignment. Funding could also be directed to drive greater attendance at collaboration events where cost is a barrier.</p> <p>The government has contributed to collaboration with funding and some small sandboxing initiatives through Ara Ake. MBIE could canvass for further sandboxing ideas to see whether there is further opportunity for trials beyond MTR that may be blocked by existing regulatory settings. Reviews of interesting sandboxing trials overseas may also be helpful to suggest appropriate trials in New Zealand.</p>
48	<p>Could co-funding for procurement of non-network services help address barriers to uptake of non-network solutions (NNS) by electricity distributors?</p>
	<p>PowerNet consider it is unlikely that there is a significant scale of opportunity being missed currently from lack of non-network solution development. PowerNet has explored options on its managed networks but has only found a small number of viable NNS opportunities to date. Potentially co-funding innovation could help address areas of capability development for EDBs as non-network solutions do require significant additional analysis for each case considered. The analysis is generally more complex requiring consideration of energy across applicable time periods in addition to absolute peak demand.</p> <p>Co-funding for the procurement of non-network services (NNS) holds substantial potential for addressing barriers to the adoption of NNS by electricity distributors. One of the primary obstacles is the financial burden associated with integrating innovative solutions into existing infrastructure. Co-funding mechanisms, involving partnerships with government agencies, industry stakeholders, or private investors, offer a means to alleviate this financial burden. By sharing the costs, electricity distributors are more inclined to explore and implement NNS, promoting the adoption of technologies such as demand response, energy storage, and grid optimization solutions. This shared risk approach can reduce the financial strain and encourage distributors to invest in innovation, making their grids more resilient, efficient, and adaptable to the changing energy landscape.</p> <p>Co-funding also brings valuable expertise and knowledge sharing to the table. Collaborative ventures often involve organizations or agencies with specialized insights into NNS. This expertise aids distributors in navigating the complexities of adopting non-network solutions effectively. Moreover, co-funding accelerates NNS deployment, allowing for faster integration of innovative technologies. The benefits of these initiatives extend to consumers, as operational efficiencies and improved grid reliability can lead to potential reductions in energy costs. In conclusion, co-funding for NNS procurement represents a strategic approach to overcome the barriers that hinder electricity distributors from embracing innovation and enhancing their systems' flexibility and sustainability. It leverages financial support, risk mitigation, specialized knowledge, and benefits to consumers, all contributing to a more resilient and efficient electricity distribution network.</p>
49	<p>Would measures to maximise existing distribution network use and provide system reliability (such as dynamic operating envelopes) help in New Zealand? If yes, what actions should be taken to support this?</p>

	<p>Maximizing the utilization of New Zealand's existing distribution networks and enhancing system reliability through congestion management is a critical step in the country's energy transformation. By making the most of the existing infrastructure, New Zealand can efficiently meet the growing energy demands while minimising capital investments required for network expansion.</p> <p>PowerNet believe network operating envelopes (or similar concepts) will likely be an important part of flexibility services development. Congestion management on networks is critical and must be implemented reliably for the security of supply to customers. This means that congestion relief must be given the highest priority as if not managed effectively customers will experience a suboptimal supply service. For example, where network capacity is exceeded, the impact may be a complete outage (or voltage outside of regulatory limits that should be considered equivalent to an outage) which is a greater impact on customers than ramping down the charge rate of EV chargers in that area of the distribution network.</p> <p>PowerNet anticipate that additional flexibility services would operate within operating envelopes that EDBs determine based on their congestion analysis. Pricing mechanisms may help prioritise what DER is recruited to manage congestion that is communicated via operating envelopes. Networks will need to monitor the impact of operating envelopes and where impacts outweigh the cost of network upgrades then this would indicate the appropriate upgrade point for networks.</p> <p>When EDBs gain sufficient access to smart meter consumption data they can start to progress this analysis. While PowerNet has relatively good information on the construction and geography of its LV networks (the other key prerequisite for congestion analysis), it is noted not all EDBs do, and there will still be significant work for them to develop their congestion analysis once smart meter data is at hand. Regardless, this is not a small undertaking and will take time. PowerNet urge prompt intervention to ensure all service providers involved in developing flexibility services have access to smart meter data so that flexibility services are able to develop ahead of need.</p> <p>To support the implementation of these measures, New Zealand should consider several strategic actions. Regulatory frameworks should be designed to incentivize utilities to optimize their networks and embrace dynamic operating envelopes. This could involve performance-based incentives and a shift toward efficiency gains. Investments in advanced technologies like smart grids, distributed energy resources, and real-time monitoring systems are vital to enable the practical implementation of dynamic operating envelopes.</p>
50	<p>What do you think of the approaches to smart device standards and cyber security outlined in this document? Are there other issues or options that should be looked at?</p>
	<p>Cyber security for smart devices is critical. Maloperation of devices in a future where networks have come to rely on specific operating parameters would result in disruption in supply at a scale dependant on the scale of any malicious maloperation or simply prevention of operation.</p> <p>Mandating smart EV charging capabilities is likely to be required to achieve optimal charging flexibility from EVs. PowerNet note that certain EVs may have their own smart capabilities negating the need for external smart capabilities built into charging devices (it would seem a relatively expensive solution). While some mandating of smart capabilities appears prudent, careful judgement should be applied to mandates to avoid inefficiencies. It is possible EVs will continue to develop monitoring and control APIs and smart chargers become somewhat redundant - in the case there is a critical mass of 'smart EVs' available mandates could be better directed to vehicles. Perhaps mandates could more generally require EV owners to have smart charging capability with the choice of whether this is provided as a feature of their vehicle or by an external charger. This may be difficult to implement but could be linked to the registration of the vehicle.</p> <p>Generally, all smart devices would benefit from standardisation and interoperability to promote competition and efficiency and some mandates are likely to be needed to achieve this outcome. EEA and EECA's Open ADR trial is a great example of an industry led approach based on these principles.</p>

51	Do you think government should provide innovation funding for automated device registration? If not, what would best ensure smart devices are made visible?
	<p>Incentives to share device capabilities should exist in a well design flexibility environment. Funding coupled with necessary mandates may be appropriate and effective as they can also support standardisation to promote efficiency.</p> <p>Regulation and standards may directly require registration of DER or flexibility capability or may be used to aid competition for efficient flexibility service development less directly. For example, flexibility providers may demonstrate value to DER owners who in order to access this value would necessarily provide sufficient information to the flex provider. At this point a mandate could require recording this data in a central register that provides access to all competing flexibility providers. The government would need to fund the development of this register.</p>
52	Are extra measures needed to grow use of retail tariffs that reward flexibility, so as to support investment in CER and improved consumer choice and affordability?
	<p>PowerNet do not believe retailers are properly incentivised to create the most efficient pricing for customers that sufficiently incentivise flexibility and DER adoption including managing distribution pass-through costs.</p> <p>PowerNet has done what the EA has requested and has designed significant price differentials into its managed networks' line pricing. This is designed to incentivise customers opting into load management schemes and shifting consumption behaviour to target off peak demand periods. This should ultimately lead to efficient use of the network, efficient investment in DER and flexibility products and ultimately to a more cost-efficient network service to customers. However, PowerNet has not seen evidence of 'gen-tailers' sufficiently reflecting these price signals and therefore customers are not exposed to the incentives PowerNet has tried to create. Furthermore, PowerNet's historic pricing over many years has included very strong day vs night pricing differentials which were not reflected in retailer pricing suggesting it not a matter of time to react to pricing changes. Where retailers have provided innovative pricing options it appears the driver is to create attractive marketing schemes rather than reflect underlying costs. There are examples where retailer pricing is counterproductive and worst cases have forced unnecessary distribution network upgrades at significant additional cost to customers. PowerNet is also concerned at seeing independent retailers removing access to spot price products for new customers siting issues with the electricity market.</p> <p>The paper acknowledges that most of the EDBs do have incentives in their pricing. If retailers require the whole country to shift to somewhat consistent pricing to reflect price signals to customers, it does not bode well for retailers achieving pricing granularity that recognises diversity of flexibility requirements across the country. PowerNet believe retailers incentives may be oppositional rather than mutually reinforcing for example the need to keep pricing simple to attract and retain customers is stronger than managing input costs with more complex pricing that calls on customers to adjust their behaviour for savings.</p> <p>Complexity is a significant barrier to DER uptake and flexibility services provision for domestic customers. Only a small minority are likely to explore the potential value of DER and shop around to find pricing the best rewards their flexibility. This means that the large majority of customers are likely to remain on simple pricing as long as it is available and will therefore not see the value of flexibility. Education of customers would be valuable in helping raise awareness of the value of consumption flexibility however it is unlikely that this would sufficiently address the understanding gap of the overall long-term implications of their consumption behaviour.</p> <p>Customers are not looking for more hassle and complexity, so it is important that industry delivers on their behalf. This means presenting a simple value proposition and a set and forget solution for customers with regulation that protects the customers best interests. PowerNet believe intervention to achieve cost reflective retailer pricing is likely needed to enable the efficient development of flexibility services in New Zealand.</p>
53	Should the government consider ways to create more investment certainty for local battery storage? If so, what technology should be looked at for this?
	In light of the growing importance of local battery storage in New Zealand's evolving energy landscape, it is advisable for the government to explore ways to create greater investment certainty for this critical sector. Providing a stable investment environment is key to attracting

	<p>private and public investments into local battery storage projects. One approach could involve offering financial incentives or tax benefits for local battery storage deployment, similar to the incentives provided for renewable energy projects. Such incentives can encourage investment and promote the deployment of advanced battery technologies that can store excess energy generated from renewable sources and release it during peak demand periods, contributing to grid stability and reliability.</p> <p>Investment based on currently available pricing packages that are understood to have no guarantee of longer-term stability is likely to be viewed as risky. Retail pricing that is required to reflect underlying costs would likely improve certainty for customers looking at investment in storage. Forecasting the value for flexibility services whether by price forecasts or some other mechanism would likely be a useful educational tool for customers if feasible.</p>
54	<p>Should further thought be given to making upfront money accessible to all household types, at all income levels, for household battery storage or other types of CER?</p>
	<p>Sustainable energy practices, such as household battery storage, offer not only energy security but also potential cost savings. By removing financial barriers for all income groups, these technologies can help reduce electricity expenses and increase energy independence for low and moderate-income households.</p> <p>PowerNet expects that a financing mechanism would aid the efficient uptake of DER technologies. Governments and financial institutions may collaborate to consider low-interest loans, or innovative financing models that facilitate broader access to CER technologies. Outright funding would obviously speed up uptake however is not likely to be efficient particularly if prematurely applied prior to other barriers to flexibility services discussed in this response being addressed.</p> <p>Outreach and education initiatives should accompany these financial mechanisms. Effective campaigns can raise awareness among households, providing them with a better understanding of the benefits of CER and the available funding options. Ensuring that people are well-informed empowers them to make informed decisions regarding sustainable energy solutions, thereby contributing to a more inclusive and equitable energy landscape.</p>
55	<p>Should government think about ways to reduce ‘soft costs’ (like the cost of regulations, sourcing products, and upskilling supplier staff) for installing local battery storage with solar and other forms of CER/DER storage? If so, what technology should be looked at?</p>
	<p>Yes. Competency qualifications for DER installations should be considered, linked with training around standards as well as practical skills. This could be supported with standardised templates for commissioning and potential EDB connection requirements to improve installer efficiency and service quality.</p>
56	<p>Is a regulatory review of critical data availability needed? If so, what issues should be looked at in the review?</p>
	<p>Yes in view of smart meter data. Data availability is a critical barrier to the development of flexibility services in support of future affordable electricity in New Zealand. Smart meter data access needs to be opened up freely and equally to services providers that may then compete on an even playing field to maximise value for customer DER and flexibility services. This would be supported by appropriate permissions management to ensure sufficient security provisions are in place, fair trading, and protecting data from misuse. In time network constraint data may be similarly shared but appropriate time for constraint analysis development will need to be allowed recognising that this development path is sequential.</p> <p>A DER registry that creates visibility of DER (type, capacity and limitations around access/availability etc) across competing flexibility providers would create efficiency for the industry and customers. Potentially it could be a mandated requirement for service providers to update registry DER data once customers have opted into an agreement to have their DER devices controlled by any service provider.</p>
<p>Part 5: Whole-of-System considerations</p>	
57	<p>What measures do you consider the government should prioritise to support the transition?</p>

	<ul style="list-style-type: none"> • Sufficient flexibility for price path expenditure that recognises quickly changing decarbonisation, electrification, flexibility development and resilience priorities with efficient mechanisms to enable adjustments. • Smart meter data access to all potential service providers. • Cost reflective pricing from retailers should be prioritised ahead of further EDB pricing reform pressure.
58	<p>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.</p>
	<p>PowerNet is concerned that there is a systemic lack of coordinated oversight for the electricity industry, and with the rate of change occurring there is need for an all of system review across multiple agencies (MBIE, Commerce Commission, Electricity Authority). By way of example, recent requests for information and other submissions by the various Government agencies indicates this lack of co-ordination.</p> <p>Particularly concerning is that in completing this submission PowerNet and other submitters are providing the same feedback to many similar questions from other regulatory consultations. Some critical issues have been identified and communicated for some time (and repeated in this submission) but are not being responded to effectively by regulators.</p>
59	<p>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?</p>
	<p>REZ models are gaining popularity due to their flexibility and ability to harness renewable energy potential in specific regions. This approach can help concentrate renewable energy generation in areas with abundant resources, minimizing grid congestion and enabling efficient transmission. It promotes competition among various renewable energy projects, spurring innovation, and cost reductions. However, while a REZ model can effectively encourage renewable energy development, it may not be suitable for addressing first-mover disadvantage when connecting to electricity distribution networks. REZs typically focus on transmission infrastructure at a larger scale and may not directly address local distribution network challenges.</p> <p>A central planning model, as seen in the NSW EnergyCo, can provide a comprehensive and centralized approach to transmission and distribution network management. Such models can efficiently allocate resources, reduce duplication, and ensure coordinated development across the entire energy system. This approach may help mitigate first-mover disadvantages by providing a standardized process and shared resources for new entrants connecting to distribution networks. Central planning models can also facilitate grid modernization, integration of DERs, and enhanced reliability.</p> <p>To determine the most suitable approach for New Zealand, it is essential to consider the unique energy landscape, goals, and challenges. A balanced strategy that combines elements of both models, where appropriate, may be the most effective means of addressing first-mover disadvantage, promoting renewable energy integration, and ensuring the efficient operation of the electricity distribution and transmission networks. Such an approach would aim to maximize the benefits of REZs for renewable energy development while also addressing local distribution challenges through coordinated central planning.</p>
60	<p>Should MBIE regularly publish opportunities for generation investment to enable informed market decision-making?</p>
	<p>Yes, transparent and readily accessible information regarding investment opportunities in the generation sector may benefit fostering a competitive and efficient energy market. It empowers investors, stakeholders, and market participants to make informed, strategic</p>

	decisions, promotes fair competition, and contributes to the development of a more robust and responsive energy generation landscape in New Zealand.
61	How should the government balance the aims of sustainability, reliability and affordability as we transition to a renewable electricity system?
	Some standardised way of quantifying and designing resilience is needed. Resilience is not as quantifiable as a cost as other improvements may be and expectations are likely quite variable. Agreed standards should be developed and implemented to avoid hindsight post-mortem blaming. Some factors such as sustainability can be considered bottom lines where a certain target must be achieved whereas the balance of reliability and affordability are a trade-off that customers must determine.
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?
	Cost reflectiveness is likely to be the most important aspect of pricing to achieve efficient outcomes however it is unlikely to be sufficient on its own to enable flexibility services to be optimally available. Upfront costs may be a barrier that creates inequities and prevent efficient outcomes even with cost-reflective pricing so financing pricing methodologies may be beneficial. Additional interventions need to be very carefully applied to ensure they do not create issues such as inequity. Ultimately all factors that influence pricing must one-way or another be translated to a cost-value assessment. Certain factors such as decarbonisation may be relatively inflexible demands that must be delivered in which case costs would simply be reflected in pricing. Energy hardship (or hardship generally) should be dealt with explicitly outside of pricing.
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?
	<p>The focus on competitive, reliable, and efficient regulation may rely on market forces too heavily and objectives need to recognise the increasing priorities of decarbonisation and equity. Competition is generally a positive force creating innovation and efficiencies for customers however it is evident that sometimes competition leads to perverse outcomes. For example, retailers compete to attract and retain customers, which appears to be a stronger driver than managing their input costs by reflecting variation in line charges designed to incentivise efficient use of distribution networks. Higher input costs are then passed onto customers.</p> <p>Customers preference for simple pricing is often prioritised over variable pricing; removing the incentive for customers to manage their consumption behaviour. This is in part an issue of the customer not being aware of the value of flexibility they may offer, due to the complexity of understanding the impact of their behaviour, which has short term but also significant long-term consequences for the cost of their electricity supply services.</p> <p>At the other extreme TOU schemes have been seen to create very strong signals to shift consumption behaviour into narrow time periods ("herding") which can create false consumption peaks and have forced large but unnecessary distribution network upgrades costs that customers have had to pay for. This demonstrates competition alone is not sufficient to drive outcomes that are ultimately the most efficient, equitable or low emissions.</p> <p>PowerNet assume EV owners are opting for 3-pin trickle charging over installing smart chargers due to cost considerations. Customers often cannot access or do not see the value of smart charging (the cost of a smart charger may offset the cost of upgrading the network out on the street - as long as everyone else is doing it) therefore the upfront cost of the smart charger is unattractive (if not an outright affordability issue). Ultimately this issue may be too complex to expect customers to understand and therefore the decision perhaps should not rest with the customer (or retailers reflecting what customers indicate as their immediate preference).</p>