

Delivering key distribution sector reform

Work programme

16 October 2023

Overview

The electricity sector has a major role to play in New Zealand's shift to a low carbon future.

As the sector drives towards more renewable electricity, a decarbonised system will support the accelerated electrification of transport and heat – a significant contribution to New Zealand achieving net zero carbon by 2050.

The Authority is focused on ensuring the transition is as efficient as possible while maintaining energy security, system adaptability and affordability for consumers. This means making sure regulation keeps pace with the sector and enables the transformation under way.

The distribution sector has a key role to play in the transition, helping to unlock the benefits of innovation and technological change, realise the potential of distributed energy resources.

Responding to key issues faced across the distribution sector

Our vision is for regulation of distribution networks to support innovation, promote competition and consumer choice in contestable markets such as flexibility services, and maintain reliability and security of electricity supply.

In December 2022, we published the Issues Paper: *Updating the Regulatory Settings for Distribution Networks* for consultation. The issues paper was informed by earlier work, including updated advice from the Innovation and Participation Advisory Group on *Creating equal access to electricity networks* in July 2021.

The paper canvassed the Authority's understanding of the issues facing distributors and areas for further analysis to support regulatory reform.

Decarbonisation of the economy and the necessary increase in electrification will place higher demands on electricity networks. Based on estimates by the Energy Efficiency and Conservation Authority (EECA) on power used by electric vehicles, we can expect about a 30 percent increase in household annual electricity consumption just from charging one electric vehicle at home.¹ The latest statistics indicate 60 percent of households have two or more cars, suggesting the potential for an even greater increase in annual household electricity consumption.

Distribution networks must also accommodate the growth of technologies such as solar panels and batteries which will increase local generation and two-way energy flows. Again, this change will depend on technological developments and consumer behaviour.

Upgrades to substations and cabling will be disruptive, time-consuming, and expensive. The distribution sector and consumers are considering new ways to create additional capacity without building physical infrastructure.

Taking advantage of controllable distributed energy resources will be essential. Distributed energy resources are technologies used to generate, store, or manage energy and include communicating/controllable: appliances, solar panels, batteries and power inverters. These technologies can provide flexibility by modifying generation and/or consumption patterns, including in response to a price signal, to provide a service within the energy system. For

¹ EECA estimate is that an electric car consumes 22.8kWh per 100 kms. Assuming the average New Zealand light vehicle travels 10,000 km per year. Then average annual electricity use for an electric vehicle is $22.8\text{kWh} \times (10000/100) = 2,280\text{kWh}$

example, water heating or electric vehicle charging could adjust or turn on and off in response to signals based on electricity prices or a congestion charge from a distributor.

Flexibility services could play an increasingly important role in reducing the overall costs of the transition for consumers. The flexibility available from distributed energy resources can reduce the need for thermal peaking in the electricity market and offset or defer the need for new lines investments and generation.

Sapere estimated if distributed energy resources were to realise their potential, the net benefit from 2021 to 2050 would be \$6.9 billion.² These benefits include reduced spending on new lines and generation (including thermal peaking, and hydro-firming). These benefits are additional to the benefits expected to occur from distributed energy resources under the current market and regulatory environment. These benefits will ultimately be passed on to consumers in the form of lower network or electricity charges or revenue earned from electricity generation.

New business models will allow consumers to take more control over their electricity and expectations of providers will shift as consumers expect more and different services to meet their energy requirements. The consumer of the future will be more connected and autonomous, as energy becomes more of a service dictated by consumer needs and behaviour.

Accurate price signals will be an important part of ensuring the right investment in networks as well as optimising demand response. Better consumer engagement will contribute to unnecessary additional upgrades or investments in infrastructure, resulting in less cost for consumers. Consumers will benefit when non-network solutions are the more efficient method of providing network capacity.

Ensuring the regulatory settings respond to this challenge

Stakeholder feedback has been crucial to build our understanding of these issues and prioritise the many areas to ensure the rules do not stand in the way of change.

This work programme for distribution reform outlines the key initial actions we will progress in the next 12-24 months. We consider the nine projects included are either urgent or of the greatest benefit to the sector and to consumers. The projects will cover:

- addressing non-price barriers to efficient connection of load
- improving distributors' and flexibility traders' access to meter data and visibility of distributed energy resources
- consulting on bringing flexibility service providers into the Electricity Industry Participation Code 2010 (the Code) to improve visibility and coordination between participants
- addressing the barriers to efficient prioritisation by distributors of connecting large scale distributed generation
- giving clarity to:

² D. Reeve, T Stevenson & C. Comendant (2021) *Cost benefit analysis of distributed energy resources in New Zealand: A report for the Electricity Authority*, Wellington, New Zealand

- the threshold where the Authority would consider extending the corporate separation and ‘arm’s-length’ rules in Part 6A of the Code (the ‘arm’s-length’ rules) to distributors’ involvement in other contestable markets (including non-network solutions)
- the process for applying for a Code exemption for running trials
- how we will monitor distributors’ progress on investment in network capacity and use of non-network solutions.

Section 2 of this paper outlines the work programme committed to and the intended outcomes.

This work programme aligns with several other work streams, within and outside the Authority, integral to delivering on our vision for distribution networks, including:

- The Ministry of Business, Innovation and Employment’s work relating to supporting the transition to an expanded and highly renewable electricity system.³
- Our distribution pricing reform (such as peak/congestion pricing for the distribution networks, connection pricing and further considering how network pricing signals are being passed through to end customers).⁴
- Our Future Security and Resilience programme.⁵ This work is aimed at ensuring the electricity system remains secure and resilient during New Zealand’s low-emissions energy transition.
- The Commerce Commission’s information disclosure work regarding network visibility and use of non-traditional solutions, and its Input Methodology review and 2025-30 electricity distribution Default Price-Quality Path work regarding investment incentives, quality standards and innovation allowances.
- EECA’s work on private electric vehicle chargers (including product standards; such as default settings that facilitate off peak charging), and its broader standards programme.⁶
- Electricity Engineers’ Association (EEA) Flextalk initiative⁷ to evaluate the processes that need to be in place to enable the use of an open-access communication protocol to actively manage charging of electric vehicles. This work supports the development of flexibility services for electric vehicles.

We will continue to work closely with these stakeholders to ensure all this work remains aligned.

³ <https://www.mbie.govt.nz/dmsdocument/26909-measures-for-transition-to-an-expanded-and-highly-renewable-electricity-system-pdf>

⁴ https://www.ea.govt.nz/documents/3367/Issues_Paper_-_Target_reform_of_Distribution_Pricing.pdf

⁵ <https://www.ea.govt.nz/projects/all/future-security-and-resilience/>

⁶ <https://www.eeca.govt.nz/insights/eeca-insights/electric-vehicles-and-aotearoa/>

⁷ <https://www.eea.co.nz/Site/asset-management/adr-project/about-adr-project.aspx>

What happens next

The work programme is published on our website and will be updated as progress is made. The Authority will continue to engage with the sector and other interested parties on our work in the distribution space.

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1. Introduction

- 1.1. The purpose of this work is to better support the electricity sector's transition to a low-emissions economy.
- 1.2. The Electricity Authority Te Mana Hiko (the Authority) began engaging with stakeholders on the potential issues and options to improve the regulatory settings for distribution networks in 2021. We are committed to ensuring the right next steps are taken. Due to the complex nature of the regulatory settings for distribution networks, the dynamic and evolving environment, and our intention to not regulate new and emerging issues too early, this work has crossed multiple years.
- 1.3. Feedback from stakeholders has been crucial to build on our understanding of how to ensure we make the right updates to the regulatory settings at the right time. The challenges distributors are currently facing with increased demand for electricity include:
 - (a) Poor visibility of their low voltage networks (this includes power consumption and power quality data at granular levels) which inhibits distributors' ability to plan and identify or forecast bottlenecks. Poor visibility of the location and characteristics of distributed energy resources (particularly private electric vehicle chargers and solar panels combined with batteries) connected to their networks.
 - (b) Distribution networks have traditionally been built assuming diversified demand. Increasingly demand is becoming more coordinated (eg, market signals for flexibility services), and this trend is likely to continue. This can create localised capacity issues for distributors and consumers. The emergence and activities of aggregators, which may not be visible to distributors, adds to this challenge.
 - (c) Many distributors have introduced non-uniform usage tariffs that facilitate better peak price signals, but progress on shifting consumers to those tariffs and ensuring signals align with costs may not be happening at the right pace. Analysis of the response to price signals is made more complex due to retailers and aggregators sitting between distributors and consumers.
 - (d) The ability for distributors to keep pace or keep just ahead of capacity needs is difficult when the need for capacity is difficult to forecast, and the range of solutions to solve capacity constraints become more diverse. This includes increased demands for connections, and the added complexity of increasing amounts of distributed energy resources creating more variable power flows.
- 1.4. Using the insights gained from consultation, we have developed this programme of work. We considered all submissions in full, along with our own detailed analysis, when developing this work programme. Our summary of submissions was published on our website in August 2023.
- 1.5. Thanks to the extensive consultation that has taken place over the last two years, we are confident that we can move quickly to move quickly on these projects and begin to see the outcomes and benefits of this work for the industry and consumers.

2. The work programme

Action	Outcome(s) the work supports	How the work supports the outcome(s)	Anticipated timing
We will maintain and update the vision for distribution networks and improve our ability to assess progress on a range of matters including the consideration and use of non-network solutions	Distributors manage network capacity and congestion efficiently, supporting innovation, encouraging competition	Improving our vision for distribution networks and monitoring will enable us to report progress, support our understanding of developments and support better policy advice and decision making	Commence September 2023 and ongoing work
We will develop a Code amendment proposal to enable meter equipment providers to contract directly with distributors and flexibility traders to provide connection point ⁸ data	Distributors manage network capacity and congestion efficiently, supporting innovation, and encouraging competition Flexibility providers can access the full distributed energy resource value stack	This proposed project involves developing a Code amendment proposal allowing meter equipment providers to contract directly with distributors and flexibility traders to provide standardised connection point-level consumption and power quality data. This would facilitate more equal and quicker access to data relating to capacity and congestion	Consultation released April 2024 Amendment gazetted late 2024
We will develop a Code amendment proposal to direct meter equipment providers to	Distributors manage network capacity and congestion efficiently, supporting	This project proposes implementing the Innovation and Participation Advisory Group's Input Services	Consultation released May 2024 Amendment gazetted late 2024

⁸ Connection point refers to installation control point.

<p>publish standard 'pay-as-you-go' terms (based on charges for recovery of reasonable costs) for data which they would be required to make open to all parties</p>	<p>innovation, and encouraging competition</p> <p>Flexibility providers can access the full distributed energy resource value stack</p>	<p>recommendation that meter equipment providers publish standard 'pay-as-you-go' terms for data, open to all parties. This would include services schedules, terms and conditions, and pricing that allows costs for any given connection point to be determined. This will improve visibility of network capacity and congestion</p>	
<p>Review and update distributed energy resource information requirements captured in the registry database (eg, functionality, batteries, electric vehicle chargers), and/or establish a separate distributed energy resource register</p>	<p>Distributors manage network capacity and congestion efficiently, supporting innovation, and encouraging competition</p> <p>Flexibility providers can access the full distributed energy resource value stack</p>	<p>This proposed project will consider amendments to the registry data fields to better capture distributed energy resources visibility (eg, functionality, batteries, electric vehicle chargers), particularly addressing the current limitation of only reflecting distributed generation. Alongside registry consideration, the project will also consider whether a more enduring/functional approach is to also, or alternatively, establish a distributed energy resource register separate from the existing register. This will improve visibility of distributed energy resources and their location</p>	<p>Mid-2024 delivery if registry amended</p> <p>Late 2024-early 2025 (if a separate distributed energy resource register is adopted)</p>

<p>Produce guidelines on conditional Code exemption process to support regulatory 'sandboxes' and trials</p>	<p>Flexibility providers can access the full distributed energy resource value stack</p>	<p>This project will focus on producing guidance for industry to promote the use of the Code exemption application process to better support the use of industry trials. This evaluation should consider the end-to-end process for trials, including: who can apply; application and application management; the trial processes, timeframes, monitoring and evaluation; and the process to recommend permanent Code changes for successful trials</p>	<p>Commence September 2023 Release early 2024</p>
<p>Consult on bringing flexibility providers into the Code to improve visibility and coordination between participants</p>	<p>Efficient development of non-network solutions Flexibility providers can access the full distributed energy resource value stack</p>	<p>This project will consider whether bringing flexibility providers into the Code, as a participant, would contribute to a regulatory environment that supports the efficient development of non-network solutions and further support trials</p>	<p>Commence September 2023 Consult early 2024 Amendment September 2024</p>
<p>Produce guidance on imposing 'arm's-length' rules</p>	<p>Supporting innovation Encouraging competition Creating the regulatory environment that supports the efficient development of non-network solutions</p>	<p>The issues paper signalled that we would provide guidance to industry on the threshold that when crossed would lead us to extend the current 'arm's-length' rules to a distributor operating non-network solutions. This creates greater certainty for investors</p>	<p>Commence February 2024 Release June 2024</p>

<p>Address the non-price barriers to the efficient connection of load</p>	<p>The requirements, pricing, and process for new and expanded network connections are clear, reasonable and impartial</p>	<p>The focus for this project will be on investigating whether a 'mirror Part 6' of the Code (or some variation) could support the faster uptake of load</p>	<p>Commence September 2023 Issues paper April 2024 Decision paper December 2025</p>
<p>Address the barriers to the efficient prioritisation of large-scale distributed generation</p>	<p>The requirements, pricing, and process for new and expanded network connections are clear, reasonable and impartial</p>	<p>This project will investigate ways to better prioritise large-scale distributed generation applications on networks. It will consider barriers, international prioritisation models and the suitability of using the Transpower grid prioritisation model for networks</p>	<p>Commence September 2023 Issues paper April 2024 Decision paper December 2025</p>

3. Rationale for the work programme

- 3.1. This section describes the rationale for deciding to progress with the nine projects set out above, under each of the themes that were covered in the December 2022 issues paper.
- 3.2. The projects have been prioritised to best enable material progress on these key foundational aspects of distribution reform that underlie the Authority's vision:
 - (a) the requirements, pricing and processes for new and expanding network connections are clear, reasonable and impartial
 - (b) flexibility providers have timely access to data about network flexibility opportunities – an important step in providers being able to access all revenue streams in the DER value stack
 - (c) distributors can see, and signal, current and impending congestion. This is a pre-condition for distributors being able to optimally plan and manage their networks, including managing congestion efficiently
 - (d) network security and reliability levels are efficiently maintained for all users throughout this transition period.

Improving monitoring of the distribution sector

- 3.3. To play a more valuable role in the energy transition, we need to be able to accurately describe the progress and the challenges distribution networks are facing. This means improving our monitoring of the distribution sector, by collating and analysing existing sources of information and identifying and working to fill information gaps.
- 3.4. Being able to better monitor the distribution sector should improve transparency around the consideration and use of non-network solutions. Better monitoring will also improve our ability to report on developments and help with our analysis. This project will pick up information from a range of sources, including the information disclosures from distributors.
- 3.5. The Commerce Commission recently released its draft decision - reasons paper on the Targeted Information Disclosure Review 2024. The Commission is proposing to expand information disclosure requirements for distributors regarding capacity and constraints and to require the disclosure of information on distributor investigations undertaken and reporting of non-network solutions. The Commission is also proposing to require distributors to separate out all operating expenditure items for non-traditional solutions provided by third party service suppliers. The Commission intends to make its final decision in the first quarter of 2024.
- 3.6. Should the Commission expand information disclosure requirements as proposed, we will be able to use this information, and information from other sources (including the outcomes from innovation trials) and will be better placed to test distributors' actual use of competitive procurement for non-network solutions. For example, if it was apparent that third-party offerings were available and which would deliver better outcomes than self-supply we could consider extending the 'arm's-

length' rules to require distributors to operate non-network solutions through separate entities, and to deal with those entities on an 'arm's-length' basis.

- 3.7. This project is consistent with feedback we received in submissions on the issues paper. Submissions indicated support for improved transparency on the consideration of and use of non-network solutions, monitoring and reporting of progress and to only regulate if issues are identified.
- 3.8. Better information will also allow interested persons to assess investments being made by distributors regarding non-traditional solutions. This may also lead to opportunities for market participants to offer non-traditional solutions to distributors, which may ultimately lower costs for consumers.

We have prioritised a project to improve our ability to assess progress

- 3.9. This project would enable us to better comment on the distribution sector's consideration of and use of non-network solutions. This includes tracking progress using information from the Commerce Commission and other sources. We intend to be able to report on investment in traditional network solutions, distributed energy resources, and use of non-network solutions, monitor capability and capacity of the industry, how load control is developing and being used, and a range of other important variables. This information can feed back into progress reports and support future policy work. This project would also develop our vision and the outcomes we think are important for the transformation to a renewable electricity system.

Access to data and information

- 3.10. Chapter four of the issues paper outlined the issues we had identified. We consider that there are significant gaps in the level of visibility and therefore understanding of current capacity or constraints both in terms of networks and distributed energy resources, distributed energy resource locational information, and characteristics (eg, capacity and controllable or not). Likewise, we lack visibility of distributors' consideration of non-traditional solutions when thinking about the efficient management of their networks. The following outlines the key information related sub-themes.
- 3.11. We discussed the following matters in the issues paper:
 - (a) the data template needs improvement to enhance its workability
 - (b) availability of data and information (including consumption data and power quality data) for distributors
 - (c) availability of data and information for flexibility traders
 - (d) a perception that privacy law transparency requirements are a barrier to sharing or disclosing connection point data.
- 3.12. The issues paper identified a range of options to address these matters. Submissions on these issues and options are summarised in Chapter four of the Summary of Submissions 'Equal access to data and information'.

- 3.13. In general, there was broad agreement in submissions that a key area for us to focus on should be access to consumption and power quality data to enable distributors and others to better see what is happening on the low voltage network.
- 3.14. The focus initially will be on half hourly consumption and power quality data. Both datasets will support better visibility and understanding of capacity and power quality issues in the low voltage network. This information will also support better asset management and planning and identify locations where distributed energy resources may support network capacity constraints.
- 3.15. Submissions also supported prioritising data that would provide good visibility of the location, size, and functionality of distributed energy resources. Additional data will help distributors and flexibility traders better understand drivers of network congestion, the opportunities from existing controllable distributed energy resources to address network constraints, and the potential opportunities and costs of non-traditional solutions to address locational constraints.

We have prioritised three projects to improve access to data and information:

Develop a Code amendment proposal to enable meter equipment providers to contract directly with distributors and flexibility traders to provide connection point data

- 3.16. We will develop a Code amendment proposal to allow meter equipment providers to contract directly with distributors and flexibility traders to provide standardised connection point-level consumption and power quality data. This would facilitate more equal data access.

Develop a Code amendment proposal to direct meter equipment providers to publish standard 'pay-as-you-go' terms

- 3.17. We will develop a Code amendment proposal requiring meter equipment providers to publish standard 'pay-as-you-go' terms, which was recommended by the Innovation and Participation Advisory Group's Input Services. The 'pay-as-you-go' terms would be based on charges the recovery of reasonable costs to be made available to all parties. This project will consider services schedules, terms and conditions, and pricing that allows costs for any given connection point to be determined.

Review and update distributed energy resources information requirements captured in the registry database

- 3.18. We will consider amendments to the registry data fields to better capture distributed energy resource visibility (eg, functionality, batteries, electric vehicle chargers), particularly addressing the current limitation of only reflecting distributed generation. We will also consider whether a more enduring or functional approach would be to establish a distributed energy resource register separate from the existing register.

Market settings

- 3.19. Our preference (on page 48 of the issues paper) is that market settings should:
- (a) ensure that both network and non-network solutions are considered for increasing the capacity of a distribution network, so the most efficient option is pursued.
 - (b) ensure the benefits of market competition are realised by encouraging distributors to procure non-network solutions by competitive tender.
 - (c) promote a level playing field for competitors in the market for non-network solutions, so that flexibility services can be offered to all buyers in the value stack.
- 3.20. The 'Market settings for equal access' chapter of the issues paper discussed three potential issues with the distribution market settings:
- (a) distributors may prefer network solutions when non-network solutions could be more efficient
 - (b) distributors may favour 'in-house' non-network solutions
 - (c) distributors could use their monopoly position in distribution to secure an advantage in contestable markets for non-network solutions.
- 3.21. The issues paper identified a range of options to address these issues. Submissions on these issues and options are summarised in Chapter five of the Summary of Submissions. In general, there were various perspectives on whether there is an issue with distributors preferring network solutions over non-network solutions. Several submissions made the point that the Commerce Commission's information disclosure regulations already require distributors to publish their approach to non-network solutions in their asset management plans. Several submitters also stated that they already considered non-network solutions as part of their network investment planning.
- 3.22. There was a theme in submissions that we should provide space and other support for trials and/or actual deployments of non-network solutions. There was also general support for improved transparency around distributors' consideration and use of non-network solutions and increased monitoring and reporting of the use of non-network solutions. Some considered we should only regulate in this area if issues are identified.
- 3.23. We are concerned that distributors maybe more comfortable with traditional network solutions in many cases. Improved information and monitoring will help identify how the market for non-network solutions is developing and being used by distributors. We are also proposing to focus on how we might support trials and deployments of non-network solutions. This will allow time for the distributed energy resource market to deepen and for information from the Commerce Commission's information disclosures to support informed judgements.

We have prioritised three projects to improve market settings:

- 3.24. In addition to improving monitoring of the distribution sector as discussed above, we will prioritise three projects to improve market settings.

Produce guidelines on the Code exemption process and ‘regulatory sandboxes’

- 3.25. Since the publication of the issues paper, we approved Code exemptions to enable a multiple trading relationship (MTR) trial led by Kāinga Ora and Ara Ake. This was the first time we have used the Code exemption process to approve a trial of this kind. The Electricity Industry Act 2010 (Act) was amended in 2022 to enable us to grant exemptions subject to terms and conditions (conditional exemptions).
- 3.26. This project will evaluate the conditional exemption process used with the Kāinga Ora and Ara Ake MTR trial. The output of this project would be guidance for the industry on the use of the conditional exemption process for industry trials or ‘regulatory sandboxes’. We will consider the end-to-end process for trials, including who can apply, application requirements and management, the trial process, timeframes, monitoring and evaluation, and the process to put in place permanent Code changes for successful trials.
- 3.27. This project is aimed at supporting innovation and fostering a regulatory environment that supports the development of non-network solutions.

Consider whether flexibility service providers should be regulated under the Code

- 3.28. Related to the above, there is a question whether aggregators and other flexibility service providers should be brought into the Code, to improve visibility and coordination between participants. It may be appropriate that these parties be integrated into the Code and be subject to the same rules of participation that apply to other participants in the electricity system. This would also enable us to extend ‘arm’s-length’ rules to cover relationships between distributors and flexibility service providers if appropriate (discussed below). This project would investigate the merits of identifying flexibility service providers as a new type of industry participant. Before we recommend any such action we would consult on any proposal. This project is also aimed at supporting innovation and contributing to a regulatory environment that supports the development of non-network solutions.

Produce guidance on the threshold for extending the ‘arm’s-length’ rules

- 3.29. We will provide guidance on the threshold that when crossed will lead us to extend the current ‘arm’s-length’ rules to capture distributors’ involvement in contestable markets (including non-network solutions). Imposing ‘arm’s-length’ rules on distributors with respect to their non-network solutions activities would preclude them from supplying non-network solutions directly out of their existing distribution businesses. The need for us to make a foundational policy decision on this threshold was signalled in the issues paper.
- 3.30. If it was apparent that third-party offerings were available which would deliver better outcomes than self-supply and distributors were continuing to favour self-supply, we could then consider extending the ‘arm’s-length’ rules to require distributors to operate non-network solutions through separate entities. Issuing guidance on the threshold for extending the ‘arm’s-length’ rules ahead of any evaluations of distributors use of non-network solutions, provides distributors and others with a

clear understanding of our expectations and the consequences of not meeting these expectations. This project is aimed at supporting innovation, encouraging competition, and creating the regulatory environment that supports the efficient development of non-network solutions.

Capability and capacity

- 3.31. We recognise the importance of the sector having sufficient capacity to enable the uptake of distributed energy resources.
- 3.32. Electricity Engineers' Association (EEA) research⁹ from 2019 suggests that there are already shortages of skilled personnel in the electricity industry. Importantly, its research suggests that an aging workforce is not being matched by new trainees to transfer over core skills. Without adequate access to skilled human resources, distributors and others will not be able to transform themselves fast enough or be able to support the overall growth required to accommodate the optimal mix of distributed energy resource integration, network investment, and non-network solution projects.
- 3.33. We consulted in the issues paper on three potential options that it could lead to address the capability and capacity issues facing the sector:
- (a) encourage collaboration, training, and education
 - (b) encourage joint venture arrangements / regional clustering, or
 - (c) a combination of both the above.

We will not progress a standalone project under capability and capacity at this stage.

- 3.34. No distributors supported guidance on collaboration, and most distributors opposed guidance on joint ventures. Other types of submitters and retailers were, as a group, fairly split on the proposals; generally, these submitters thought it was unclear whether guidance would achieve any additional benefit towards collaboration. Those who supported guidance on joint ventures were focussed on whether there is potential for guidance to help navigate any potential transgressions with obligations under the Commerce Act. However, we see that as an area appropriate for the Commerce Commission to address in the first instance.
- 3.35. We are limited in our ability to provide regulatory settings that influence access to skilled human resources. However, the importance of capacity and capability to enable distributors to transform themselves fast enough or support the optimal mix of distributed energy resource integration, network investment, and non-network solutions projects, suggests we should have a perspective on these matters. For this reason, we intend to monitor developments in this area through the distribution network monitoring programme outlined, above at paragraph 3.3 above.

⁹ Source: EEA <https://www.eea.co.nz/includes/download.ashx?ID=156866>

Operating agreements

- 3.36. Our preference is for the process of negotiating operating agreements between distributors and flexibility traders, for flexibility services, does not impede the development of the market.
- 3.37. We expressed the view, in the Issues Paper, that there is no issue needing to be addressed right now but that there will likely be value in providing guidance on best practice, templates or standardisation to help ensure that the barriers associated with negotiating operating agreements is low. The issues paper suggested ways we could monitor issues associated with operating agreements, including:
- (a) monitor progress between distributors and Transpower in developing standard offer forms for procuring non-network solutions
 - (b) monitor whether there are any concerns around operating agreements, and any relevant overseas developments
 - (c) prioritise resource to progressing other issues in the paper.
- 3.38. Submissions on these issues and options are summarised in Chapter 7 of the Summary of Submissions. In general, Distributors, Submissions generally agreed with our assessment that the operating agreements issues is currently a lower priority than other issues raised in the paper. Two 'other' parties (ie, not distributors, meter equipment providers or retailers) disagreed with the framing of the issues as a low priority. The points from those submitters were that this is an important issue, and the incentives on distributors to develop appropriate arrangements are not strong.
- 3.39. Submitters expressed concern that issues may arise if flexibility traders are required to transact with up to 29 distributors, where incentives are may not be strong. We think that risk is to an extent, for now, balanced by distributors' incentive to seek an agreement for non-network solutions - given it is in their interest to defer a traditional network investment where they have identified an alternative that may suit their network requirements.

We will not progress a standalone project under operating agreements at this stage.

- 3.40. We do not intend to progress with a standalone project for this issue at this stage. Instead, we will consider the operating agreements for flexibility services within the monitoring framework project introduced in paragraph 3.3. By deliberately monitoring issues that may arise with striking operating agreements we will be in a position to identify and intervene if necessary. We intend to monitor whether any difficulties arise in negotiating agreements for flexibility services are deterring the emergence of a flexibility market (eg, imbalances in the allocation of risk and liability are in contracts, or delaying/prohibiting reaching agreements).

Distributed Energy Resources standards

- 3.41. Our objective is for New Zealand to have the distributed energy resource standards it needs to underpin a competitive, reliable, and efficient electricity industry for the long-term benefit of consumers. We consider that these standards should be

reviewed and updated to consider the volume, size, and complexity of distributed generation applications. We also consider that the Code requires updating to ensure New Zealand can better meet its decarbonisation goals and realise the full value of distributed energy resources.

- 3.42. In the issues paper we proposed the following options to address distributed energy resource standards:
- (a) Review Part 6 of the Code: Connection of distributed generation.
 - (b) Investigate whether the inverter Standard (AS/NZS 4777.2:2020 Grid connection of energy systems via inverters, Part 2: Inverter requirements) should be made mandatory.
 - (c) Work with stakeholders to improve the performance of smart products, particularly electric vehicle chargers.
- 3.43. Submissions on these issues are summarised in Chapter 8 of the Summary of Submissions. In general, there was strong support in submissions for a Part 6 review and for this to include load, which aligns with the more recent conversations about public electric vehicle charging.
- 3.44. The work programme will consider ways to connect distributed energy resources more efficiently, including whether a 'mirror Part 6' (or some variation) might speed up connection processes. This is consistent with recent consultation released by MBIE. The work programme also includes a review of Part 6, undertaken in stages to focus on the issues of most importance to stakeholders. The initial focus will be on prioritising large distributed generation applications.
- 3.45. Large industrials and public electric vehicle charging providers say they face non-price related challenges to connect. These include, for example:
- (a) a lack of visibility on where their application sits in the process, and generally of the process as a whole.
 - (b) a wide variation in distributor processes to connect, which can be particularly frustrating for participants that operate across more than one distributor.
 - (c) a lack of engagement and inflexibility on the part of some distributors (for example, distributor being unwilling to compromise on redundancy levels, over-specifying infrastructure).
 - (d) slow distributor application approval times, and long waits for electricity infrastructure to be installed.
- 3.46. In large part, Part 6 of the Code was developed to ensure distributors engage with distributed generation providers. For this reason, we consider that Part 6 may be a potential model to address some of the issues above.
- 3.47. EECA is working on 'smart' product standards to ensure distributed energy resource products (firstly private electric vehicle chargers) have the necessary capability to realise the distributed energy resources value stack and support an efficient flexibility market. We will continue to assist EECA who has taken the policy lead in this area.

We have prioritised two projects addressing distributed energy resource standards:

- 3.48. We have identified two projects that would support its priority for the requirements, pricing and process for new and expanded network connections to be clear, reasonable and impartial.

Address the non-price barriers to the efficient connection of load

- 3.49. In order to address the non-price barriers to the connection of load we will investigate whether a 'mirror Part 6' of the Code (or some variation) could be introduced to support the faster uptake of load.

Address the barriers to the efficient prioritisation of large-scale distributed generation

- 3.50. In order to address the barriers to the efficient prioritisation of large-scale distributed generation, we will investigate methods to better prioritise large-scale distributed generation applications on networks.

Appendix A: Proposals that will be revisited near the end of the current work programme

The programme proposed in this paper is deliberately prioritised, with a view to us making material progress quickly on some key foundational aspects of distribution reform.

We expect that the context surrounding the electricity sector, distribution networks, and consumer expectations and behaviours will continue to evolve. As the initial projects are completed, or should more resources become available, we will revisit the following projects and consider new emerging issues and opportunities. These considerations will be used to inform our future work programme.

Proposal	Why work has not been prioritised
Access to 'real-time' consumption and power quality (PQ) data is needed within, not after, five years	Sector views on the timing of need for 'real-time' data vary. We are proposing to prioritise projects to improve data access which will, as commercial negotiations progress and electrification of the economy advances, better facilitate provision of more 'real-time' data
Gaining sector alignment on a common power quality data specification/standard	We are proposing to initially prioritise the practical step of requiring meter equipment providers to publish pay-as-you-go data access terms (including for power quality) with service schedules. This could inform potential future work on a data specification/standard
Data provision is dispersed across all meter equipment providers and retailers, with differing access requirements, availability, and pricing	We are proposing to prioritise targeted projects to improve data access that it considers are relatively easily implementable in a reasonable timeframe. Addressing the dispersed nature of data, for example through a form of centralised data platform, would be a very complex long-term project
Fund trials and/or assistance with tender and contractual arrangements	Funding trials would mean that distributors have room to experiment before adopting technology on a wider scale. However, funding is not part of the EA's current business. MBIE has launched a \$20m fund for projects which facilitate distributed energy resources, and we have been asked to join the assessment panel
Require distributors to make standing offer price information for distributed energy resources to support longer	Requires granular information on the location of network need. This information is not currently available to post on distributor's websites

term alternatives to network investment	
Imposing 'arm's-length' rules on distributors involved in certain downstream contestable markets	This approach could be considered if monitoring identifies distributors were hindering or preventing competitive conduct in downstream markets
Part 6 of the Code: Connection of distributed generation needs to be reviewed to better respond to the number, size and complexity of distributed generation applications	Given resource constraints, we are proposing to prioritise the sections of Part 6 that stakeholders have identified of most importance
Connection and operation standards are needed to improve network power quality and support the most efficient use of networks (eg, the proposal to mandate the inverter performance Standard, addressing unauthorised connections)	Given resource constraints, we are proposing to undertake maintenance work only (eg, contributing to the current trans-Tasman update to the inverter performance Standard).
'Smart' products are needed to realise the greatest benefit from the distributed energy resource value stack	We are continuing to assist EECA which leads work in this area
The current Prescribed Maximum Fees (application fees) for distributed generation penalise other network users and encourage inefficient investment decisions	This work will be informed by our priority work above (eg, addressing barriers to the efficient prioritisation of large-scale distributed generation) and the Pricing team's 2023/24 work
The Part 2 distributed generation application process does not reflect the complexity associated with large-scale distributed generation applications	The current Part 2 process can be used for now, plus this issue will be informed by work to better prioritise large distributed generation applications
Next steps regarding distributors' choices between network and non-network solutions for network enhancement, including the potential for more prescriptive interventions	The current work aims to support the development of non-network solutions by making network congestion and distributed energy resources more visible. Enhanced monitoring of distributors' choices on the use of non-network solutions will help inform the need for more prescriptive interventions

<p>More direct consumer facing work including: promoting more efficient use of electricity and investment in distributed energy resources; consumer protections and ensuring consumers can derive value from their flexibility services</p>	<p>This work is best sequenced after some of the core foundations for distribution reform have been laid</p>
<p>Developing a flexibility roadmap, in conjunction with the sector, to promote the development of a flexibility market</p>	<p>This work is best sequenced after some of the core foundations for distribution reform have been laid</p>
<p>Addressing particular flexibility policy questions that will need addressing, for example the use, value and financial flows for ripple control</p>	<p>This work is best sequenced after some of the core foundations for distribution reform have been laid</p>
<p>A more permanent answer to the question of how consumers and small businesses can have multiple relationships with electricity service providers</p>	<p>This work will partially be informed by the outcomes from multiple trader relationship trial</p>

Appendix B: Status of options that were presented in the December 2022 issues paper

Issue	Options identified in issues paper	Future actions
New Zealand should study the UK's approach to energy data and digitalisation	Commission two separate reviews to consider the merit and practicalities of implementing the recommendations of the UK's Energy Data Taskforce around unlocking the value of customer actions and assets and delivering interoperability	We will not progress this option currently as many submitters considered the UK context to not be a useful comparison. We are instead prioritising practical projects to enhance data access but will continue to consider international best practice
Distributors are not permitted to receive power quality data in the same way as consumption data	Modify the data template so that it includes a requirement to provide power quality data	We are proposing direct contracting between meter equipment providers and distributors that it considers will more effectively address this issue
	Submitters' additional proposal: Require meter status data (eg, supporting locating faults), to be separated out from the general PQ data and considered in its own category of 'operational data'	This can be considered as part of the meter equipment provider-distributor direct contracting proposal
In addition to gaining retailer permission to collect connection point data direct from the meter equipment provider (eg, consumption Data through the data template), the distributor also needs to negotiate an	Develop a default template to streamline negotiations with meter equipment providers for data	We are proposing direct contracting between meter equipment providers and distributors that it considers will more effectively address this issue. We may also consider a template as part of that process

access agreement with the meter equipment provider		
Flexibility traders do not have equal access to connection point Data	Modify the data template so that flexibility traders can use it to obtain consumption data (and power quality data if the data template is modified so that it includes a requirement to provide power quality data as well)	We propose a Code amendment for meter equipment providers to contract directly with flexibility traders for connection point data. This was more strongly supported by submitters than modifying the data template
Flexibility traders do not have access to granular Network Congestion Data on LV networks	Improve distributors' access to granular historical consumption data to calculate congestion on their LV networks that can be passed to flexibility traders	We are addressing this issue by proposing a project for direct contracting between meter equipment providers and distributors
	Submitter additional proposal: Require distributors to publish a separate statement of opportunities document signalling where and when non-network solutions may avert network investment and flexibility traders could be contracted to provide responding distributed energy resources	We are continuing to work with the Commerce Commission regarding its Information Disclosure review for distributors, which proposes various improvements to distributors' network constraint information disclosure
Flexibility traders do not have access to 'real-time' granular congestion or connection point data	Not explicitly identified as meter equipment providers were only beginning to offer this data, and it was not considered to be needed in the short-term	We are prioritising data projects in the work programme to improve data access which will, as commercial negotiations with meter equipment providers progress and distributed energy resources/smart appliance provision advances, better facilitate provision of more 'real-time' data

Privacy Law transparency requirements could be perceived as a barrier to disclosing connection point Data	We provide model privacy disclosure terms for retailers to include in their terms and conditions or privacy notices	We are awaiting amendments to the Privacy Act 2020 concerning notification requirements around indirect collection of personal information by third parties, before progressing this proposal
Sector alignment is lacking on a common power quality data specification/standard	Not explicitly identified. Submitter proposal: Establish a common power quality data specification/standard	We are proposing to initially prioritise requiring meter equipment providers to publish pay-as-you-go data access terms (including for power quality) with service schedules. This could inform potential future work on a data specification or standard
Data provision is dispersed across all meter equipment providers and retailers, with differing access requirements, availability, and pricing	Not explicitly identified. Submitter's' additional proposal: Establish a form of centralised data platform accessible to all parties, acknowledging permitted uses	We are proposing to prioritise the three targeted data and information projects listed earlier for the work programme to improve data access, that it considers are relatively easily implementable in a reasonable timeframe. Addressing the dispersed nature of data, for example through a form of centralised data platform, is a very complex project we may consider in the longer-term
Issue 1: Distributors may prefer network solutions when non-network solutions could be more efficient	Option 1: Education and guidance for distributors on flexibility services	As signalled in the issues paper, we do not intend to progress this option
	Option 2: Fund trials and/or assistance with tender and contractual arrangements	Funding trials would mean that distributors have room to experiment before adopting technology on a wider scale. In the issues paper we tentatively supported funding of trials and/or assistance of the

		sort that might be available from MBIE. This remains our position. MBIE has launched a \$20m fund to support distributed energy resource innovation
	Option 3: Require distributors to show they have explored non-network solutions	This option was generally not supported in submissions. While we do not intend to progress this option at this stage, we will be looking to get better information on distributor's consideration of non-network solutions
Issue 2: Distributors may favour in-house non-network solutions	Option 1: Education and guidelines on competitive procurement and coordination	As signalled in the issues paper, we do not intend to progress this option
	Option 2: Enable multiple trading relationships.	Since the issues paper was published we have approved Code exemptions and amendments to enable a multiple trading relationship (MTR) trial. We will monitor the trial with a view to considering whether further Code amendments to enable MTRs are desirable
	Option 3: Encourage distributors to make standing offers for distributed energy resources	This was tentatively preferred by us in the issues paper. However, this requires granular information on the location of network need. This information is not currently available. We will reassess priority of this option in 18–24 months
	Option 4: Monitor distributors' use of competitive procurement	We will prioritise improvements to its monitoring of the distribution sector (discussed above)

	Option 5: Impose 'arm's-length' rules on distributors involved in flexibility services	We will produce guidance to the industry on the threshold that, when crossed, would lead us to extend the current 'arm's-length' rules to distributors operating non-network solutions. Imposing 'arm's-length' rules in future could be considered if monitoring identifies this threshold has been crossed (discussed above)
Issue 3: Distributors may use their monopoly position in distribution to secure an advantage in contestable markets	Option 1: Monitor the behaviour of distributors in contestable markets	We will prioritise improvements to its monitoring of the distribution sector (discussed above)
	Option 2: Impose 'arm's-length' rules on distributors involved in certain downstream contestable markets	As above, we will produce guidance to the industry on the threshold that, when crossed, would lead us to extend the current 'arm's-length' rules to distributors operating in contestable markets (including non-network solutions). Imposing 'arm's-length' rules in future could be considered if monitoring identifies this threshold has been crossed
Part 6 needs to be reviewed to better respond to the number, size and complexity of distributed generation applications	Review Part 6 of the Code	Given resource constraints, we are proposing to prioritise the sections of Part 6 that stakeholders have identified of most importance

<p>Does Part 6 adequately respond to the potential benefits from DER?</p>	<p>Amend Part 6 to explicitly include all forms of DER</p>	<p>In general, there was stakeholder support to add DER to Part 6 where it exports. However, exporting DER (eg, bi-directional electric vehicle chargers) are already covered by Part 6. Some stakeholders considered adding non-exporting DER to Part 6 as overreach and unnecessary/unworkable. That said, there was a strong voice for us to consider what other Parts of the Code should consider DER (eg, registry data capture, provisions for flexibility providers)</p>
<p>The efficiency of Part 6 application processes can be improved</p>	<p>Amend Part 6 distributed generation application processes</p>	<p>We are prioritising the application processes of most importance to stakeholders (large load and the prioritisation of large distributed generation applications)</p>
<p>The Part 2 distributed generation application process does not reflect the complexity associated with large-scale distributed generation applications</p>	<p>Develop a new application process for large-scale distributed generation</p>	<p>The current Part 2 process can be used for now, plus this issue will be informed by work to better prioritise large distributed generation applications</p>
<p>Robust connection and operation standards are needed to ensure network power quality and support the most efficient use of networks</p>	<p>Strengthen power quality standards (eg, investigate whether to mandate the inverter performance Standard)</p>	<p>Given resource constraints, we are proposing to undertake maintenance work only (eg, contributing to the current trans-Tasman update to the inverter performance Standard)</p>

Smart products are needed to realise more of the distributed energy resource value stack

Work with stakeholders to improve the smartness of distributed energy resource products

We are continuing to assist EECA which has taken the policy lead in this area