Submission on *Measures for Transition to an Expanded and Highly Renewable Electricity System*

Name	
Organisation (if applicable)	Enel X
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Release of information

Please let us know if you would like any part of your submission to be kept confidential.

☐ I would like to be contacted before the release or use of my submission in the summary of submissions that will be published by MBIE after the consultation.

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n/a

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Responses to questions

Part 1: Growing Renewable Generation

6. 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.

We support the development of measures to bring firming capacity online in NZ. However, we encourage MBIE to design a scheme that facilitates participation by the demand side, not just renewable generation and storage.

Demand response is a valuable resource that is a key part of delivering reliability in a changing energy system, for the reasons set out below.

- **Perfectly suited to providing emergency reserves.** Demand response resources are perfectly suited, and have a global track record, of providing firming capacity to help deliver reliability in critical grid periods, e.g. for 4-hour events during an afternoon/evening winter peak.
- **Cost effective.** Demand response is a lower cost resource than supply-side capacity because it utilises the capability of existing assets The capex required to activate 1 MW of demand response capacity is a fraction of what is required to build 1 MW of supply-side capacity.
- **Can be built very quickly.** Demand response can be brought to market very quickly, again because it makes use of existing assets.
- **Reduces requirement for new grid infrastructure.** The utilisation of demand response resources reduces the need to build and pay for new generation and network infrastructure that only gets used for a small number of hours in the year.
- **No social licence concerns.** No new grid infrastructure is required to enable a demand response resource, and participation is voluntary.
- **Financial benefits go back into the community.** The financial benefits of providing demand response accrue to those who provide it, i.e. New Zealand's commercial and industrial businesses.
- **Aggregation delivers reliability.** Aggregation of demand response resources across different grid locations delivers a highly reliable source of capacity, as there is no single point of failure.
- **Valuable grid resource.** Demand response resources are capable of delivering more than firming capacity. Once in the market, they can provide other valuable grid services, such as frequency control and network support services.
- **Supports transition to net zero.** Demand response is generally dispatched in critical peak periods when fossil fuel generators are often needed to help deliver reliability. Reducing demand on the grid at these times therefore reduces the requirement for these emissions-intensive firming resources.

- **Alleviates grid congestion.** Activation of demand response responses helps to alleviate network congestion in peak periods by reducing the amount of electricity drawn from the grid, in contrast to supply-side resources, which can exacerbate grid congestion.

Governments and market regulators around the world are recognising the valuable role that demand response can play in supporting the transition to net zero, particularly to meet peak demand needs outside high renewable generation periods. As an example, the NSW Government has sought demand response capacity through its firming tender (discussed further below), along with renewable generation and storage.[1]

Generally, Enel X supports a technology-neutral approach: it is better to allow all technologies to compete on a level playing field using the same mechanism than introducing bespoke arrangements for different technologies. For this reason, we consider demand response should be able to compete and provide an additional source of competitive tension. However, there is an argument to exclude fossil fuels from such a scheme, to support decarbonisation of the sector and future proof the market, noting that the purpose of this work is to support the transition to a highly renewable system.

15. What types of commercial arrangements for demand response are you aware of that are working well to support industrial demand response?

Demand side policy development in NZ appears to have been focused on demand response provided by residential consumers and very large industrials. However, there is a large proportion of energy users in between these two customer types, in the way of small-medium commercial and industrial energy users. Enel X encourages MBIE to consider arrangements to enable and incentive demand response by these mid-sized loads.

Enel X has an active portfolio of small-medium commercial and industrial loads providing interruptible load services to the grid. The interruptible load framework has largely been successful in incentivising the demand side to help support grid frequency. Many of these loads have the capability to provide other demand flexibility services.

However, outside of the interruptible load framework, there are not many opportunities for energy users to offer their flexibility capacity. Direct purchasing and spot exposure are suitable flexibility mechanisms for some well-resourced, energy savvy energy users. However, not all energy users have the capability and inclination to purchase energy in this way. There is also very little incentive to participate via the dispatch notification and dispatchable demand frameworks, and it's unclear whether there has been any significant uptake of either.

Any electricity market that wishes to see strong levels of demand side participation must have two things:

1. Market rules that allow demand response to participate
2. Firm revenue.

There are a range of ways in which these two criteria can be met. We have provided several examples below from Enel X's Australian experience. Any or all of these approaches could be adapted for the New Zealand context to support greater reliability of supply via demand response.

Reliability and Emergency Reserve Trader (RERT) scheme

The Australian Energy Market Operator (AEMO) maintains a panel of RERT providers, including demand response providers, that it can call on to provide reserves to maintain reliability when

[1] See AEMO Services, NSW Electricity Infrastructure Tenders, Guidelines – Tender Round 2 Firming Infrastructure, March 2023, p.6.

there is insufficient supply to meet demand, typically over the summer period. It is used as the last line of defence before load-shedding occurs. In return, RERT participants receive incentive payments.

Participants providing short notice RERT (between 3 hours and 7 days notice) agree on prices when they are appointed to the panel. If AEMO identifies a reliability shortfall, AEMO will ask panel providers to offer to provide emergency reserves for a specified period. RERT contracts can have provisions to pay providers for availability, pre-activation and activation. No payments are made simply for being on the panel. To be eligible to provide RERT, providers must demonstrate additionality, i.e. to show that they would not otherwise be reducing demand (e.g. in response to the spot price or through a contractual arrangement with another party) when the reserve is required.

A RERT-style mechanism is a good measure to quickly bring flexibility into the market when it is most needed. It is relatively simple to implement and a good way to introduce customers to demand flexibility, helping build understanding and trust. However, as the RERT is only exercised when a reliability shortfall is identified, there is no year-to-year revenue certainty.

Peak Demand Reduction Scheme (PDRS)

The PDRS was introduced by the NSW Government due to the critical risk of supply shortfalls in NSW in coming years. It is aimed at reducing energy demand during the peak summer period by providing incentives for businesses and households to reduce usage during certain hours. Retailers and large users have a peak demand reduction target, which they can meet by creating or buying peak reduction certificates for eligible activities.

The PDRS effectively pays for demand reduction capacity to be available during defined peak hours. It works in concert with the wholesale demand response mechanism (WDRM, explained further below), allowing participants to also earn revenue from the wholesale market when they are dispatched. The NSW Government is currently consulting on a new element to be incorporated into the PDRS to incentivise demand response capacity to be made available by large energy users participating in the WDRM.[2]

The PDRS helps bring new capacity into the market and ensure that capacity is available by providing a more certain revenue stream than the spot price alone. Targets have been legislated out to 2030, so again it is more investable than shorter-term schemes like the RERT. The NSW scheme provides a good example of how mechanisms can be introduced to incentivise demand response at times when it is most needed.

Firming tender

The NSW Government is able to direct AEMO Services to run competitive tenders to ensure that NSW has sufficient firming capacity as the state's coal-fired power plants retire and are replaced with variable renewable generation. A range of different technology types, including demand response, are eligible to participate, provided they are scheduled through the central dispatch mechanism.

AEMO Services enters into Long Term Energy Service Agreements (LTESA) with the successful tenderers. LTESAs provide revenue support for up to 10 years through a series of one-year options to receive an annuity payment. Demand response resources awarded contracts must participate via the WDRM, and have obligations to offer that capacity into the WDRM during lack of reserve periods.

[2] See NSW Government Office of Energy & Climate Change, Peak Demand Reduction Scheme, Rule change 2 consultation paper, October 2023.

The firming tender, like the PDRS, draws on an existing mechanism (the WDRM) to support operational dispatch, and supplements this with a firm revenue stream to encourage demand response to enter the market and make capacity available when it is needed.

Linking capacity payments with an operational mechanism

Both the PDRS and firming tender are given effect through participation in the wholesale spot market via the WDRM. The WDRM is a negawatt trading scheme that allows demand response to be sold directly into the electricity market. Large users are eligible to participate themselves or via a specialist aggregator such as Enel X.

NZ could introduce a similar negawatt trading scheme. There are wider benefits to facilitating greater participation by demand response in the wholesale market, particularly where this can be facilitated by third party providers (as discussed further below). In Australia, for example, retailers have begun offering more flexibility products since the WDRM was introduced. Arguably without the introduction of additional competition for flexibility services that WDRM enabled, retailers would be making more limited progress.

On the other hand, we acknowledge that a negawatt trading scheme could be complex to introduce. An alternative mechanism could be amending the dispatchable load scheme to make it easier and more attractive for loads to participate, and for capacity payments to be linked to participation in this mechanism.

16. What new measures could be developed to encourage large industrial users, distributors and/or retailers to support large-scale flexibility?

Enel X encourages MBIE to consider widening the scope of potential providers of large-scale flexibility to include specialist third party aggregators.

Third party providers such as Enel X are specialist providers of demand response services. Since demand response is our core business, we have a strong incentive to identify customers that may be suitable to provide demand response and provide them with the education, confidence and support to participate.

We recommend that any new policy measures ensure that the delivery of demand response services is separated from the delivery of retail services. That is, the party offering demand response should not have to be the retailer supplying energy to that customer. Separating retail services from other services allows specialist flexibility providers to develop more targeted products, with customers benefiting from access to a wider suite of services, greater competition and additional revenue streams. In Enel X's experience, markets that have seen the strongest uptake of demand response are those that have separated the provision of flexibility services from the provision of retail services.

The measures we identify to encourage greater provision of demand response in question 15 can all be implemented in a way that enables third party providers to facilitate demand response.

In summary, we consider the fastest way to make a meaningful level of flexibility available at times when it is most needed is to:

- introduce a mechanism that provides additional payments for demand response capacity to be made available, and
- make flexibility services party-agnostic and so remove barriers to third party specialists offering flexibility services.

General Comments: