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To the Committee Secretary

RE: Select Committee into Fair Dinkum Power

Thank you for the opportunity to provide input on this inquiry.

EnerNOC, the largest provider of demand response capability worldwide, was acquired by the Enel Group in 2017, and in October 2018 EnerNOC rebranded as Enel X. Enel X is dedicated to developing innovative products and digital solutions in sectors where energy is showing the greatest potential for transformation: cities, homes, industries and electric mobility. In Australia, Enel X partners with commercial and industrial customers to help them optimise how they use electricity and be rewarded for the benefits that their flexibility can provide to the power system. In the NEM, Enel X's customers participate in the energy and frequency control ancillary service (FCAS) markets, and provide emergency reserves for AEMO under the RERT framework.

It is well acknowledged that the demand side must play an increasingly important role in meeting the needs of electricity systems around the world. The NEM is no exception, and this has been recognised in recent reviews conducted by the ACCC, the AEMC, the Energy Security Board and the Finkel Panel. However, a range of policy and regulatory barriers have held back energy consumers' ability to make a significant impact in the NEM, and for them to be rewarded for that contribution. Removing these barriers, and thus activating the significant quantity of latent and emerging demand-side capability in the NEM, will not only empower consumers but will help to address many of the issues that the industry is facing at present, including high wholesale and retail electricity prices, system security and reliability concerns, and the high costs of network augmentation.

Our submission focuses on items (a), (b), (e) and (f) of the terms of reference. Specifically, it puts forward five concrete actions that can be taken to empower consumers to play a more important role in the NEM in a way that contributes to the Government's reliability, security, affordability and sustainability objectives.

If you have any questions relating to this submission, please feel free to get in contact with Claire Richards (Manager, Industry Engagement and Regulatory Affairs)

Regards

Jeffrey Renaud
Head of Asia Pacific

1. Stop reviewing and start doing. Set a clear energy and emissions policy at the federal level, and then limit government intervention.

Federal energy and emissions policy has been plagued by uncertainty for many years. Uncertainty and threats of market intervention undermine industry confidence and increase the risk of new investments, the costs of which are borne by energy consumers.

The COAG Energy Council should formulate and finalise a clear, national energy and emissions policy and then step back to allow the market to do what it was designed to do: meet the electricity reliability needs of consumers at the lowest efficient cost.

Numerous reviews have been conducted by the ACCC, AEMC, AEMO, AER, the Energy Security Board and the Finkel Panel over the past few years on all aspects of emissions policy and energy market reform. Now is the time to put in place the policy and regulatory frameworks recommended in those reviews.

The uptake of new energy technologies by consumers is unrelenting and its pace will only increase. It would be a missed opportunity if policy uncertainty and slow reform processes continued to hinder consumers' ability to play a more active role in the NEM.

2. Introduce a wholesale demand response mechanism.

The introduction of a wholesale demand response mechanism is the single largest way to increase the level of demand side participation in the NEM.

Wholesale demand response involves consumers reducing their electricity consumption when the spot price is high. Retailers buy from the wholesale market at the spot price, and so may have an incentive to buy less during high price conditions, depending on their trading position. Similarly, spot-exposed large energy users may curtail some of their load during periods of high prices to avoid the high purchase cost. Such response can put downward pressure on spot prices, to the benefit of all electricity consumers.

Spot prices are generally high when electricity demand is high and supply is scarce. Supply scarcities during peak periods have historically been addressed by building new "peaking" generation. But, as AEMO noted recently:¹

"with the increase in [distributed energy resources] and the growing capability for voluntary price-responsive demand to contribute to the reliability and security of the power system, properly designed wholesale markets can increase competition and support more economically efficient system-wide asset utilisation. The net outcome of a well-designed two-way market can create significant consumer benefits – a more efficient, reliable and secure system at a lower total cost at the meter."

However, there is little evidence to suggest that there is a meaningful level of wholesale demand response in the NEM at present. Most energy users have few opportunities to offer wholesale demand response. The cause of this is clear: retailers are the only parties currently able to access the full value of wholesale demand response on behalf of their

¹ AEMO, Wholesale demand response mechanisms: Submission to AEMC consultation paper, December 2018, p. 3.

customers, but they do not have a natural incentive to offer it. Similarly, retailers do not have a natural incentive to allow their customers to access demand response services from other providers. This is despite the fact that energy users are more engaged and keener than ever to do what they can to reduce their electricity consumption. Reduced electricity consumption brings benefits to customers through lower electricity bills, but it can also benefit the broader grid through improved reliability and lower network costs.

The lack of wholesale demand response in the NEM, and the benefits of amending the market rules to better facilitate it, are well acknowledged. Three rule change requests on the matter are now before the AEMC for its consideration.² But we've been here before. A wholesale demand response mechanism was first recommended by the COAG Energy Council in the 2002 Parer review. In 2012 the AEMC recommended a demand response mechanism in its *Power of choice review* but later rejected a rule change that would have seen one implemented. Since then, recommendations to establish a mechanism have been made by the Finkel Panel, the ACCC, the COAG Energy Council and the AEMC again.³ A significant amount of analysis has already been undertaken, and there are numerous experiences from international markets that can be drawn upon to design and implement a successful mechanism.

A successful demand response mechanism will open up opportunities for aggregators to offer in the combined demand response capability of electricity customers *independently* of retailers, and to share the benefits of that with customers. This will not only support consumer choice and promote competition in the energy market, but will help to address many of the issues that the industry is facing at present, including high wholesale and retail electricity prices, and reliability concerns. The longer it takes to design and implement such a mechanism, the longer it will take for these benefits to be realised.

Enel X recommends that the COAG Energy Council, the AEMC and AEMO prioritise the consideration and implementation of a demand response mechanism so we do not delay the benefits of wholesale demand response any further.

3. Streamline regulatory changes that enable aggregators to participate in the NEM, and make sure technical requirements are proportionate to the service being provided.

The easier it is for aggregators to participate in the NEM, the easier it is for consumers to engage in the NEM.

The final report of the ACCC's 2018 retail electricity pricing inquiry noted that:

“Technology innovations and declining costs are creating opportunities to expand the use of non-traditional methods of reducing peak electricity demand. Key technologies such as embedded (local) generation, battery storage and load control, when coupled

² Enel X's detailed views on these proposals are set out in its submission. See: <https://www.aemc.gov.au/sites/default/files/2019-01/Enel%20X.pdf>

³ Specifically, the AEMC in its *Power of choice review* and *Reliability frameworks review*, the Finkel Panel in its *Review of the future security of the NEM*, the ACCC in its *Retail electricity pricing inquiry* and the COAG Energy Council in its *National energy productivity plan*

with accurate information on customer load provided through smart meters, allow customers to take control of the volume and timing of their electricity use.

While the main focus of demand response to date has been directed to large industrial customers, recent technological, market and regulatory developments have made it easier for a wider range of smaller commercial and residential customers to access such services, and for those smaller loads to be aggregated and exposed to market signals.”

Consumers’ ability to participate in the NEM relies on aggregation. Aggregation has a number of benefits:

- It results in a more material provision of the service. A single residential customer reducing its electricity consumption will not have any meaningful market or network impact. If the reduction is coordinated across many customers, the impact can be significant.
- It enables consumers to access the value of managing their energy use. As above, without aggregation, most customers are unable to monetise the value of changing their electricity consumption.
- It creates efficiencies by reducing the number of interactions between the buyer of the service (e.g. AEMO) and the providers of that service (i.e. customers).
- It reduces complexity for customers. Customers can “set and forget” while the aggregator manages technical issues and delivers the service on customers’ behalf.
- It allows a single party (i.e. the aggregator) to manage the potential non-delivery of a service, for example by building redundancy into its portfolio. This creates assurance for the buyer of the service that the service will be delivered as agreed.

Enel X’s own experiences in the NEM attest to the benefits of aggregation.

- Since October 2017, participating Enel X customers have, in aggregate, been offering demand reductions to help stabilise system frequency following unexpected mismatches between supply and demand. Not only has our participation increased competition and decreased prices in the FCAS markets, it has enabled participating customers to access the value of reducing their electricity consumption.
- On 25 and 26 January 2019, the NEM experienced unit outages at two coal-fired generators and low wind output at a time when grid demand was higher than forecast. Through the reliability and emergency reserve trader (RERT) mechanism, participating Enel X customers in Victoria reduced their aggregate grid consumption by 30MW to help maintain reliability and minimise involuntary load shedding, in a way that had a minimal impact on the customers’ business operations.

Over the past few years there has been a proliferation of NEM registered participant categories to accommodate new technologies and business models, including aggregation. While these changes are important and welcome, they are made and amended on a piecemeal basis through individual rule change requests.

Feasibly, a single electricity customer site can both import and export electricity, using a range of onsite technologies such as energy storage, generation and switching controls. This capability can be used to offer a number of services in the NEM, for example:

- energy generation to offer into the electricity spot market
- energy reductions to offer into a future demand response mechanism
- energy generation and reductions to offer into the FCAS markets.

However, the regulatory framework may currently require an aggregator to register in multiple categories to provide each of these services on behalf of its customers. For example:

- The existing Small Generation Aggregator framework allows a business to offer electricity into the spot market, but not FCAS.
- The existing Market Ancillary Service Provider framework allows customers to offer FCAS by reducing load, but it is not clear whether they can do so using generation.
- The implementation of a demand response mechanism could see the creation of a new registration category – the Demand Response Service Provider – able to offer only reductions in load into the wholesale market.

The technical and regulatory obligations of each participant category overlap in some places, and differ in others.

Enel X cautions against piecemeal additions and amendments to the frameworks under which aggregators participate in the NEM. Such an approach is likely to produce a market participation framework that creates unnecessary complexity for aggregators of behind-the-meter resources. Further, the existing registration and technical obligations may become unnecessarily onerous as aggregators seek to include residential or small business sites in their portfolio.

These issues can affect the incentives for aggregators to enter the market, and thus they have the potential to limit competition and choice in the energy products and services that electricity consumers value. Enel X recommends that the regulatory requirements that apply to aggregation be streamlined wherever possible, and that the technical requirements be reviewed so that they are proportionate to the services being provided.

4. Recognise and value the capabilities of distributed energy storage.

The existing regulatory framework was established at a time when large, synchronous generators supplied electricity and customers were passive consumers of it. Significant changes have been made over the past few years to better reflect the current and future state of the electricity system, but the changes are not keeping pace with technology development.

This is particularly the case for energy storage. The AEMC, AEMO and AER are identifying and working through the many issues associated with integrating energy storage into the

regulatory framework and NEM operations. At the same time, even more consumers are considering investments in energy storage, and a number of government subsidies for the technology have been announced.

The many capabilities of energy storage, particularly battery storage, are well known. They can respond to an external signal near-instantaneously, and provide valuable security and reliability services with high accuracy. For example, battery storage technologies can quickly arrest frequency deviations under low inertia, high rate-of-change-of-frequency conditions, which are common in grids with high renewable penetration.

It would be a missed opportunity if the uptake of energy storage technologies outstripped the pace of regulatory change to enable its participation in the NEM and the proper valuation of its capabilities. Recognising these capabilities, and putting in place frameworks that support the provision of these important services, will enable AEMO to procure what it needs to maintain system reliability and security at least cost.

Enel X recommends that work to accommodate and recognise the potential of energy storage technologies be progressed as a matter of priority.

5. Strengthen regulatory incentives for network businesses to engage with the customers in its network to offer demand response.

While demand response can be used as an effective tool to manage high wholesale prices, and to provide valuable system reliability and security services, it can also be used to control or reduce demand peaks within a network. More effective management of network peaks may mean that the network business can defer or avoid network augmentation, the costs of which are borne by electricity consumers.

Network demand response is relatively well supported by the existing regulatory framework: mechanisms like the investments tests for transmission and distribution require network businesses to consider “non-network options” (such as demand management) each time they make a major investment. These mechanisms continue to be strengthened to ensure that network businesses aren’t incentivised to pursue “poles-and-wires” solutions to challenges that demand management can solve more cost-effectively.

However, demand response providers still face some significant commercial barriers that may be limiting the amount of network demand response being offered. The two most significant are:

- **Short duration programs.** In most cases, demand response requires several years to amortise investments and deliver a return to customers and the service providers themselves. However, many network demand response opportunities are short in duration, with some lasting just one or two summers. Further, a network business’s ability and willingness to pay for demand response may be affected by the periodicity of their five-year regulatory cycles, and changes to forward demand forecasts.
- **Small scale programs.** Most network demand response opportunities, particularly at the distribution level where most residential and commercial consumers are

connected, are quite small in terms of geographic footprint and quantity of response required.

As a result, opportunities for network demand response are limited because costs must be recovered over a short period, across a small quantity of demand response, resulting in a higher per unit cost.

These issues can potentially be overcome by the introduction of a wholesale demand response mechanism. That is, it will be easier for non-network service providers to propose and deliver viable projects if a network constraint emerges because they will already have a pool of customers to draw from, having developed demand response capability for wholesale market purposes. In addition, where a service provider recruits additional customers to meet a program's need in a constrained area, they can present those customers with an ongoing opportunity even once the network program has ended.

Enel X recommends that the AEMC and the AER consider these issues in their ongoing work in this area. We also recommend that the AER report regularly on the outcomes of the recent changes to the incentives on network businesses to consider "non-network" options, so there is transparency of how well the framework is working, and whether there is scope to further improve it.