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Dr Kerry Schott AO
Chair
Energy Security Board
Submitted by email: info@esb.org.au

30 September 2019

Dear Dr Schott

RE: Post 2025 market design issues paper

Thank you for the opportunity to provide feedback on the Energy Security Board's (ESB) post 2025 market design issues paper (Issues Paper).

As has been well recognised, the National Electricity Market (NEM) is at the start of a significant transition. The increased penetration of utility-scale renewable generation and distributed energy resources as well as more intense weather events as a result of climate change will, and in some instances already have, reduced reliability and security in the NEM. Demand-side flexibility will form an important part of any market design that seeks to address the challenges identified in the Issues Paper.

Enel X works with commercial and industrial energy users to develop demand-side flexibility and offer it into wholesale capacity, energy and ancillary services markets worldwide, as well as to network businesses. We have over 50 demand response programs in 20 countries, which involve altering customers' consumption patterns and controlling onsite generation. In the NEM, Enel X participates in the energy and frequency control ancillary services (FCAS) markets, offers network support to distribution businesses and has developed reserves for AEMO under the RERT framework, including through the ARENA/AEMO demand response trial.

We consider the role of demand-side flexibility will become increasingly important in the NEM as Australia transitions to a low carbon economy. Demand response will have a critical role to play in providing both additional capacity and grid support services, as a low cost means to help maintain reliability and security. This review provides an opportunity to ensure that the market frameworks appropriately identify, value and reward such flexibility, and that the demand side is treated on an equal footing with the supply side. A failure to properly consider the potential of the demand side risks locking in old technologies and approaches, at a high cost to consumers.

This submission sets out our view on the role that demand-side flexibility can play in any future market design. If you have any questions relating to this submission, please do not hesitate to contact me.

Regards

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An active demand side is critical to keeping costs down

Enel X welcomes the ESB’s recognition of the role that the demand side can, and should, play as the NEM transitions towards integration of increased variable and distributed resources. As the ESB notes:

*without efficient use of demand response, the overall investment in generation capacity could be larger than required.*¹

A market framework that encourages and supports greater use of demand-side flexibility is critical to ensuring that consumers do not pay more than they need to for their energy. Demand-side flexibility is the ability for customers to intelligently adjust when they consume grid electricity, including via demand response and the use of on-site generation and storage. Demand-side flexibility benefits customers in terms of a potential new revenue stream and lower energy costs, as well as providing support to the grid and keeping grid power costs down.

Encouraging demand-side participation by appropriately valuing and rewarding demand-side flexibility will therefore benefit not just those customers who can provide grid support services, but all customers that rely on the grid for their power through lower overall costs.

Utilising existing demand-side resources to support the transition towards a low carbon electricity market may prove a quicker as well as cheaper alternative to significant investment in new generation or network capacity. Demand-side resources are more easily activated than capital intensive generation or network. The level of investment required is small compared to supply-side solutions. As well as reducing overall costs, this approach also lowers the risk that such assets could become stranded if demand patterns do not develop as forecast. This is particularly important in a rapidly changing market as we are currently experiencing.

As noted in the Issues Paper:

*Generally, resources to meet peak demand are called on rarely and sit idle waiting for extreme demand conditions or generator outages.*²

Demand-side flexibility provides a cheaper means of meeting peak demand requirements than building generation capacity that is rarely used. Aggregated demand response may also provide a more dependable capacity source, as it draws from multiple sites, reducing the risk that damage to a single line or facility could remove a large portion of capacity from the market.

Customers are ready and willing to participate. Our experience working directly with customers is that not only do they receive financial benefits from incorporating demand-side flexibility into their day-to-day operations, but they also want to help support the grid. There is a lot of flexibility available, provided the frameworks allow us to tap into it and customers are appropriately rewarded for participating.

¹ Energy Security Board, *Post 2025 Market Design: Issues Paper*, September 2019, p18.

² Ibid. p16.

Changes to market frameworks have demonstrated the value of demand response

Previous changes to market frameworks to facilitate demand response have already had a demonstrable impact on costs. In 2017 it became possible for aggregators to independently contract with customers and offer load into the frequency control ancillary services (FCAS) markets. Prior to this, although FCAS markets theoretically allowed for participation of the demand side, load could only be offered by the retailer that served the load. Under these arrangements only one customer load was participating in FCAS markets.

Since the rules changed, FCAS costs have reduced dramatically. In Q4 2017, AEMO reported that the entrance of Enel X and Hornsdale Power Reserve into the FCAS markets contributed to a \$13m reduction in FCAS costs compared to the previous quarter.³ Within a year, demand response represented 15% of the FCAS supply mix.⁴ In its most recent quarterly report, AEMO states that reduced contingency raise costs were a function of an increase in supply offered at comparatively low prices, including demand response assets operated by Enel X,⁵ suggesting the entrance of new players into the FCAS market has greatly increased competition.

FCAS markets in the NEM provide an example of how reducing barriers to demand side participation can have significant benefits in terms of lower prices for customers.

Subject to a final decision by the AEMC, a wholesale demand response mechanism is scheduled to be implemented by July 2022. This will provide a means for demand response aggregators to offer load reductions into the energy market as an alternative to generation capacity. Enel X is a strong supporter of this development. While a number of issues need to be ironed out, it is an important step in the right direction. We believe the rule change will enhance consumer choice and promote competition in the NEM, to the benefit of all electricity users, and are advocating for it to be implemented earlier than July 2022 to bring forward those customer benefits.

More can be done to recognise, value and reward demand-side flexibility

While the developments noted above are a good start, more can be done to level the playing field between the supply side and the demand side, particularly as technologies develop and evolve to facilitate greater flexibility in the way that customers use their energy. This post 2025 review provides an opportunity to think holistically about how frameworks can be amended to better recognise, value and reward demand-side flexibility. Without explicit recognition of the role the demand-side can play, there is a risk of locking in higher costs associated with supply-side solutions.

The overarching market framework and supporting rules and procedures were developed for, and are still very much focused on, the supply side. This is a hangover from the way the market historically developed and the technologies and behaviours that were present in the 1990s when the market was implemented. While some progress has been made to incorporate the demand side, as noted above, it is difficult to appropriately value and incorporate demand response in this rigid framework. Similarly, it is important that any new market framework does not over-value or lock in technologies and solutions that are commonly in use today.

³ AEMO, Quarterly Energy Dynamics – Q4 2017, March 2018, p3.

⁴ AEMO, Quarterly Energy Dynamics – Q1 2019, May 2019, p20.

⁵ AEMO, Quarterly Energy Dynamics – Q2 2019, August 2019, p18.

While the Issues Paper acknowledges the role demand response can play in the market, it does not do so on a consistent basis and there is a risk that demand-side solutions could be overlooked. We agree with the ESB's inclusion of technology neutrality as an important principle for assessing potential options for the NEM. A technology neutral approach to framing the problems that the NEM faces is an important first step to identifying technology neutral solutions. For example, we note that in the Issues Paper the ESB refers to dispatchable *generation* or dispatchable *generation or storage* as a necessary replacement for exiting coal fired generators. We consider dispatchable *resources* to be a better term that captures the broader range of solutions that are available to provide firm capacity.

Indeed, we would argue that demand-side flexibility is the best form of new capacity to meet many needs. Variable generation combined with storage and demand-side flexibility may be able to provide the same outcome at a lower cost compared to traditional generation technologies. Plausible, efficient future scenarios could have very little firm generation at all.

Similarly, in considering the development of additional markets for grid support services, the ESB should not limit potential participants to technologies that are used in today's market based on today's set of rules and standards. Enel X notes that it will not necessarily be feasible to develop markets for all potential grid support services, and that some services may be mandated. However, in considering the potential competitiveness of a market, we urge the ESB to factor in the potential for provision of the service via the demand side.

Reducing barriers to demand-side participation in a wider range of markets is only a first step. Customers also need an incentive to participate, by valuing and rewarding demand response appropriately.

There are challenges to creating the right frameworks and incentives for greater demand-side participation. A large proportion of the potential demand-side flexibility typically does not want to be called upon frequently. Further, customers want to be sure that participation will be financially worthwhile, requiring some certainty in relation to revenue payments.

Overseas markets provide useful lessons on how to value and reward demand-side flexibility and so extract the value that demand-side flexibility can offer. A number of European, North American and Asia-Pacific countries incorporate demand response capabilities into their markets to varying degrees. Of note, ISO-New England has overhauled its framework to fully integrate demand response into its energy, reserves and capacity markets. Similar efforts to integrate storage took effect this year. We understand that moving to co-optimize demand response across markets has increased participation and improved price formation, with price responsive demand satisfying a significant portion of reserve requirements following its entry in June 2018.⁶

Evidence from overseas markets suggests that demand response has greater participation in markets where capacity is explicitly valued (e.g. availability payments/capacity market) rather than in energy only markets.⁷ In contrast, energy-only markets tend to suffer from low participation.

Further, as noted in the Issues Paper, Australian governments have not hesitated to intervene in energy markets in a variety of ways where they are concerned about high prices and/or reliability and security

⁶ Potomac Economics, *2018 Assessment of the ISO New England Electricity Markets*, June 2019, p13.

⁷ The Brattle Group, *International Review of Demand Response Mechanisms in Wholesale Markets*, June 2019, p4.

issues. There is a risk that governments may not allow the high and volatile wholesale prices that an energy-only market requires to attract investment. It is worth considering alternatives to an energy-only market to provide a more coherent and consistent approach to energy market design than continued market intervention, that may have the added benefit of incentivising demand response.

Demand-side flexibility will become more critical as we transition to a low carbon economy

Demand-side flexibility will become an increasingly important mechanism to help maintain a secure and reliable grid while keeping energy bills as low as possible for customers as we transition to a low carbon economy. For Australia to meet its carbon reduction commitments first requires decarbonisation of the electricity industry, followed by increased electrification of transport and industrial processes.

The impact of this transition on the electricity sector is a critical risk to manage, but also presents an opportunity. The most effective way to manage this significant but uncertain change in demand is by building demand-side flexibility into market frameworks. Not only will this help minimise the impact of the increased electrification of the economy on the market, but it will bring online additional resources that, if appropriately rewarded, can help contribute to grid security and reliability.