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Declan Kelly
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

24 December 2018

Dear Mr. Kelly

RE: Wholesale demand response mechanisms, consultation paper

Thank you for the opportunity to provide feedback on the consultation paper for the *Wholesale demand response mechanisms* rule change requests.

Enel X (formerly EnerNOC) 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 12 countries, which involve altering customers' consumption patterns and controlling onsite generation. In the NEM, Enel X participates in the energy and FCAS markets, and has developed reserves for AEMO under the RERT framework, including through the ARENA/AEMO demand response trial.

The case for more wholesale demand response in the NEM has been well made. Mechanisms to facilitate this have been recommended by a number of organisations over the past few years, including 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*.

It is timely to put in place a framework that more explicitly values participation by the demand side. Enabling the significant quantity of latent demand response capability in the NEM not only supports consumer choice and promotes competition in the energy market, but can serve to address many of the issues that the industry is facing at present, including high wholesale and retail electricity prices, reliability and security issues, and the high costs of network augmentation.

This submission shares Enel X's views and experiences as a behind-the-meter flexibility service provider to commercial and industrial customers. However, we expect that many of our comments will be equally applicable to residential and small business consumers.

Enel X looks forward to continued engagement with the AEMC on the development of a wholesale demand response mechanism for the NEM. If you have any questions relating to this submission, please feel free to get in contact with me.

Regards

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Chapter 4 – Assessment framework		
Question 1: Assessment framework		
1A	Do stakeholders agree with the proposed assessment framework? Alternatively, are there additional principles that should be taken into account?	The assessment framework is robust and well describes the various factors that the AEMC and stakeholders should consider throughout this rule change process. Some additional comments in relation to several aspects of the framework are set out below: - **Non-distortionary.** Having a number of well-defined, standardised and scheduled demand response products available for dispatch would likely reduce the need for AEMO to procure RERT products, and make it easier for NSPs to procure demand side flexibility to avoid network investment. Aggregated wholesale demand response would compete with scheduled loads (to the extent there are any) and customers who are spot-exposed, but this would be to the benefit of energy consumers and overall market outcomes. - **Risk allocation.** Enel X agrees that placing risks on consumers, who may not be best placed to manage them, is likely to result in higher prices. For the reasons set out in more detail in response to question 7b, this is why a 'scheduled load' approach to demand response is unlikely to be successful: it would force consumers to manage more risks than most organisations are willing to. For most customers, that downside outweighs the benefit of flexibility, and so they likely choose not to participate. - **Administrative and implementation costs.** The AEMC should only consider the incremental costs of implementing a wholesale demand response mechanism on top of the infrastructure and system changes being undertaken to implement five-minute settlement and global settlement, not the total costs. Further input from AEMO and retailers is likely to be required to enable this.
Chapter 5 – Issues for consultation		
Question 2: Nature of the issue raised		
2A	Is it difficult for consumers to participate in wholesale demand response? If so, which consumers face the greatest amount of difficulty? What is the cause of this difficulty?	Yes, it is difficult for consumers to participate in wholesale demand response in the NEM, for the reasons described by the AEMC in the consultation paper. The cause of this difficulty is clear: retailers are the only parties currently able to access the full value of wholesale demand response on behalf of their customers, but they do not have a natural incentive to offer wholesale demand response products. Similarly, retailers do not have a natural incentive to allow their customers to access demand response services from other providers. Under the traditional retail model, retailers have an incentive to maximise the customer's consumption, not minimise it, and thus are only likely to offer or allow demand response activities if it is in their commercial interest. As noted by the AEMC, it may be in a retailer's commercial interest to offer wholesale demand response products to its customers to the extent that it offsets their exposure to the wholesale spot price. However, as also noted by the AEMC, some retailers choose to hedge that risk through vertical integration, thus they are likely to have even fewer incentives to facilitate wholesale demand response by their customers.

		In Enel X's experience, many business customers have retail contracts that inhibit or explicitly prohibit their ability to engage in any demand response activities with a third party, thereby limiting the value that demand response providers can access from any arrangement. The following are extracts from two such contracts: "*The customer must not, except as required by law, enter into any arrangements for the curtailment of the rate of consumption of electricity at the premises during the pricing term without XXXX's prior written consent. Such consent may not be unreasonably withheld or delayed, but may be given subject to reasonable terms.*" *"We are the exclusive electricity retailer for each site. You must not without our prior written consent (not to be unreasonably withheld if there is no adverse operational or financial impact to us) … enter into an arrangement with any third party for curtailment of electricity consumption, or load management, at a site.*" While these extracts state that the retailer will not unreasonably withhold consent, it is difficult to determine what "unreasonable" means in this context and how enforceable this concept is. Retailers have an incentive to frustrate the negotiation of any reasonable terms. "Reasonable terms" may include terms that limit any potential value that a third party could obtain from an agreement with the customer, or make it unattractive for the customer to pursue. Further, it is likely to be very easy for a retailer to argue that a demand response arrangements will have an "operational or financial" impact on them, because reduced consumption by the customer as a result of demand response activities will reduce the quantity of electricity it procures from its retailer. This is despite the fact that energy users are more engaged and more keen than ever to do what they can to reduce electricity consumption and reduce electricity bills. This is not only to benefit themselves but the broader grid especially during periods where there is a risk to system security and reliability. Feedback from our commercial and industrial customers who are providing capacity under our RERT portfolio for the ARENA/AEMO demand response trial has shown that they are proud to be part of an industry-wide solution for easing demand on grid infrastructure and helping to ensure system reliability during peak demand periods.[1] This finding is consistent with ARENA's for residential consumers participating in the trial.[2] There are two other potential reasons why retailers are not offering wholesale demand response: - The retail business model is very different to the demand response business model, which requires a different skillset. Some retailers may lack the technical or commercial ability to offer demand response products. - In its rule change request the AEC suggested that, under the current arrangements, "a key concern that potential third party demand response specialists express is that their demand response investments are at risk of becoming stranded should the customer change retailers." Enel X would argue that this is also a

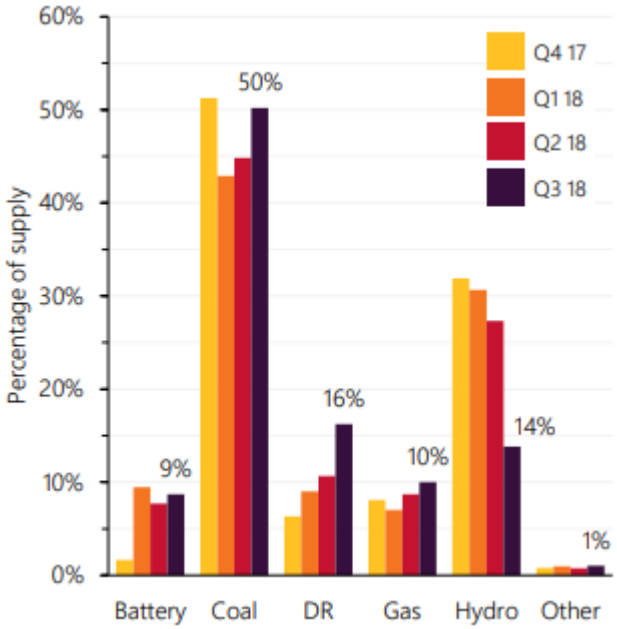
[1] See: https://arena.gov.au/assets/2018/10/20180615-EnerNOC-Knowledge-Sharing-Project-performance-report-Payment-Instalment-3-for-period-1-Dec-2017-to-31-May-2018.pdf
[2] See: https://arena.gov.au/assets/2018/08/demand-response-consumer-insights-report.pdf

		reason that most retailers do not offer demand response products beyond a spot-price pass through model – the risk of customer churn makes asset cost recovery over a one-year contract period unattractive, particularly for residential and small business consumers. In Enel X's experience the model of a retailer facilitating wholesale demand response has not really succeeded anywhere in the world – potentially because of the fundamental tension between a retail model and a demand response aggregator model, and the additional reasons discussed above. However, in Enel X's view, the issue is not necessarily that aggregators cannot or do not want to register as a retailer. This is an administrative and financial hurdle that can be surmounted. Rather, the issue is that under the current arrangements to offer customers demand response service, one must also be *the* customer's retailer. This has two implications: 1. An aggregator set up as a new-entrant retailer will struggle to get the retail business of large energy users, and thus is unlikely to drive effective competition for demand response services. 2. Demand response is a long-term business, due to the significant upfront costs associated with recruiting and enrolling customers, and then installing the required software and hardware on-site for to enable them to provide flexibility. As above, this does not align well with the short-term retail contracts that are typical in a competitive retail market.
2B	What demand response providers and products are currently available in the market?	There are a number of providers capable of offering technologies and services to support wholesale demand response, including Enel X. However, as above, their ability to access the wholesale value of demand response on behalf of their customers is limited because of the requirement to pursue a retail business as well. This severely limits the pool of potential response offerings because all demand response aggregator businesses capable of providing behind the meter flexibility must also be interested in and capable of providing a retail model. Enel X is not aware of any retailers offering demand response products other than those the AEMC lists in its consultation paper – Flow Power, ERM Power and Amber Electric, who operate under a spot price pass-through model. These retailers are relatively small players in a large market, and there is no evidence to show that these products are being delivered at scale. In Enel X's experience, under a typical retail demand response arrangement for a large customer, the retailer will share some of the wholesale price savings with the customer if they are dispatched, but will often choose not to dispatch them despite wholesale prices being very high. Two of these three retailers target large customers only. This means that residential and small business customers have very limited opportunities to access wholesale demand response. We note the outcome of a 'mystery shop' conducted by PIAC earlier this year, which showed that only one of 23 retailers surveyed offered a demand response product to residential consumers in NSW.[3]

[3] See: https://energyconsumersaustralia.com.au/wp-content/uploads/FF18-Session2B-CraigMemery-PIAC.pdf

		However, the level of wholesale demand side participation in the NEM is unclear. This is an inevitable consequence of not having a framework for explicit demand response – nothing is intrinsically visible to the market operator. The contrast with FCAS is striking: in that market, there is public visibility of the precise capacities registered, and the volumes offered and cleared in each trading interval. Enel X agrees it is important for retailers to provide further information about the products and services they are offering (either through submissions to this consultation paper or by submitting the required information through the DSP information portal), and the amount of MW they have curtailed in high demand periods, to inform the development of sound market frameworks. As noted by the AEMC in its paper, market participants' compliance with the DRP information guidelines has been lacking.
2C	Is there effective competition for demand response as a service to be used by retailers? If not, are consumers able to access the benefits of wholesale demand response directly? Is competition for wholesale demand response as a service increasing?	The current market arrangements do not facilitate the development of a competitive market environment for demand response. In such a market, there would be multiple parties highly motivated to maximise their own profits by finding and procuring as much demand response capability as they can as efficiently as they can, so long as the resulting total cost is below the total value of the services to the markets in which they can be sold. This kind of competition spurs innovation, as each party tries to find the best methods to engage with particular types of consumers. In the absence of further information about the demand response products being offered by retailers, there appears to be little evidence that there is effective competition for demand response as a service. Regarding the "efficient" level of demand response. There are multiple markets that have sustained levels of demand response at 6-10 per cent of peak demand, with no suggestion that this is inefficiently high. While these are capacity markets, the fundamental question is the same: what sources of generation/demand response is it economically efficient to deploy, and how often? For this reason, we do not agree that analogies made with international markets should be discounted if their design is different. In working out what is efficient, one should ignore price and hence ignore the market design. Rather, the issue is about the underlying costs. If the mix of load types is different, or the cost to build generation is different, then that will affect the efficient level of demand response, but the market design itself will not. It may be informative for the AEMC to conduct such analysis. For example by: - determining the total annual costs associated with building, maintaining and operating a peaking plant for different numbers of hours per year - determining the total annual costs associated with finding demand response flexibility, keeping it enabled and operating it for those hours. The "efficient" level of demand response is the volume of supply that is needed for less than the number of hours at which the two curves cross. This is a simple method; a more sophisticated analysis would take a probabilistic approach. In Enel X's experience, it is likely to be economic to source any reserve margin plus the top part of the load duration curve from demand response, rather than from peaking generation.

Question 3: Wholesale demand response currently in the NEM		
3A	Do stakeholders have views on the existing levels of wholesale demand response in the NEM? Please provide evidence or data to substantiate these views where possible.	Refer response to questions 2A, 2B and 2C. As above, retailers are currently the only market participants able to capture the full value of wholesale demand response on behalf of their customers, and there is little evidence to suggest that this is occurring on any significant scale at present. Enel X's participation in the FCAS markets may be a useful comparison for the AEMC to consider. Following the commencement of the ancillary service unbundling rule in July 2017, Enel X (as EnerNOC) commenced participation as a Market Ancillary Services Provider (MASP) in the NEM's contingency raise FCAS markets using aggregated loads. Participation in the FCAS markets using aggregated loads is an opportunity that is open to

		retailers, as it was for many years before the unbundling rule change, yet until very recently Enel X remained the only participant offering FCAS using demand side resources.[4] Enel X's impact on competition in the FCAS market has been significant. As AEMO reports in the graph below, demand response (i.e. Enel X) accounted for 16 per cent of all contingency raise FCAS enabled in Q3 2018, from zero in the same quarter last year.[5]  For the reasons set out in response to question 2A, it is not unreasonable to conclude that levels of wholesale demand response by retail customers in the NEM are low.
3B	Can retailers indicate to the Commission what they are currently doing to facilitate wholesale demand response?	N/A. Enel X is not a retailer. In Enel X's view, this shouldn't be an either/or decision. That is – the AEMC should implement a wholesale demand response mechanism even if retailers come back with evidence to suggest that there is effective competition for the provision of wholesale demand response services among retailers. The implementation of a demand response mechanism will not constrain retailers' ability to continue to offer these products. Rather, it

[4] In December 2018 ActewAGL retail was registered to provide contingency lower services using its virtual power plant.
[5] See: https://www.aemo.com.au/-/media/Files/Media_Centre/2018/QED-Q3-2018.pdf

		will increase the number of demand response offerings available to consumers and enhance competition in the wholesale electricity market, both of which are in the long term interests of consumers. In addition, participation on an explicit, scheduled basis is arguably preferable to implicit demand management by retailers, into which AEMO has no insight.
Question 4: Approach for facilitating transparent, price-response demand		
4A	Do stakeholders consider there are other regulatory solutions to: (a) providing the demand side with greater access to wholesale prices, and (b) increase the transparency of demand side response to these prices?	There is enormous value to customers in avoiding paying for hedging services, such that you would expect that any customers capable of doing it would choose this option over participating in a wholesale demand response mechanism. However, it requires the customer to take on a lot of risk, which may explain why so few customers do it, despite having had the ability to do so since market start. The purpose of a wholesale demand response mechanism is to open up participation to customers who do not have sufficient financial resources or a management that is willing to wear this risk. Requiring all electricity customers to be exposed to the spot price is theoretically efficient and would likely result in higher levels of wholesale demand response. However, it is unlikely to be a practical solution for all customers – particularly for residential or business customers who cannot actively manage their electricity consumption every five minutes, or for whom energy is not a priority and thus prefer a predictable and 'risk-managed' approach. Enel X is of the view that spot price exposure should continue to be an option open to customers who wish to take on the responsibility of managing wholesale price fluctuations, but that retailers should also be able to continue to offer retail contracts that offer risk-management services on behalf of customers. The same applies to the development of demand response contracts. The introduction of a demand response mechanism that allows non-retailers to participate, alongside the continued ability for retailers to offer demand response products, will enable these businesses to compete and innovate to offer products and services that consumers value – whether that is a fully spot-exposed, price-responsive load or a more nuanced approach that is tailored to the customer's needs and interests. Enel X agrees that in future it will likely be more appropriate for retailers, or those parties in 'control' of customer load/generation, to forecast aggregate consumption on their customers' behalf, rather than AEMO continuing to do this. As retailers/energy service providers install more technologies on the demand side and establish more regular communication links with their customers, they will likely have much better information about the historical and expected consumption patterns of their customers than AEMO will. Requiring retailer forecasting will therefore likely result in more efficient forecasting overall. However, careful checks and balances would need to be in place to mitigate the risk that the forecasts are inaccurate. However, requiring retailers to provide load forecasts will not provide any insight into price sensitivity – that is, how customers respond to changing prices. Proper transparency of that requires separation of what would

		normally happen (the forecast) from what flexibility is offered, which is what a wholesale demand response mechanism does.
Question 5: Efficient consumption of electricity		
5A	Do stakeholders agree with our characterisation of how efficient wholesale demand response would improve outcomes in the wholesale market?	Yes. The paper provides a good summary of how efficient wholesale demand response would improve outcomes in the wholesale market. One benefit not mentioned is the potential for demand response to improve liquidity in the contract market. The most obvious business model for a DRSP would be to sell caps in relation to its demand response portfolio (like a peaking generator does). Cap contracts help market customers manage their exposure to high/volatile wholesale prices. A number of recent reviews, including the AEMC's *Retail competition reviews*, have concluded that a lack of liquidity in the contract market is creating a barrier to retailer entry and expansion.
5B	What are stakeholders' views on how facilitating wholesale demand response could affect outcomes in the wholesale energy market?	As above, Enel X agrees with the AEMC's characterisation of the benefits of wholesale demand response.
Question 6: Compensation for wholesale demand response services		
6A	Are consumers able to access competitive offers from retailers or third parties to assist consumers to undertake wholesale demand response? Is the level of competition greater for larger consumers?	See responses to questions 2 and 3. Enel X's participation in the FCAS market as a result of the ancillary services unbundling rule change has demonstrated the benefits of increasing competition for demand response. It is likely that there are currently more opportunities for large customers to undertake wholesale demand response for the following reasons: - Rising electricity prices have had a significant impact on commercial and industrial businesses that use a lot of electricity. Many have recruited in-house energy specialists or engaged the services of consultancies and other energy service providers to actively seek out opportunities to reduce electricity consumption, thus potentially making it a larger market. - The costs associated with installing equipment to enable active demand response are likely to be proportionately smaller for a large customer than for residential consumers, thus making it a potentially more attractive market for providers.
Question 7: Demand response participating as a scheduled load		
7A	Has the Commission appropriately characterised the benefits of	As noted by the AEMC, consumers unilaterally change their consumption all the time without informing the market what their consumption would have been were it not for the demand response. This implicit demand response is likely useful and efficient when it occurs in response to mild price variations, as these occur frequently enough for AEMO to model the response accurately. However, if this sort of demand response

	increasing transparency relating to wholesale demand response?	occurred in significant volumes around extreme peaks, AEMO would likely be unable to know whether it could count on a lot of load being curtailed when prices reach extreme levels. We agree that such demand response should be explicit, and dispatched, but under a scheduled "negawatts" approach rather than a scheduled load approach.
7B	Do stakeholders consider that if demand response were to participate in the wholesale market, it should do so as a scheduled load (rather than scheduled "negawatts")? Would the pros and cons of participating as a scheduled load differ for different types of demand response providers, e.g. those that have demand response controls on all or only part of their load?	Enel X does not support a requirement for demand response to participate as scheduled load, for the reasons set out below. **1. The concern that a load's baseline consumption might not equal actual consumption at the start of a dispatch interval can be addressed.** Enel X acknowledges that any difference between the baseline (i.e. forecast) and actual load at the start of a dispatch interval may have an impact on AEMO's ability to accurately match demand and supply. Concerns about significant differences between the baseline and actual can be addressed by using dynamic baseline methodologies (e.g. high X of Y) that allow day-of adjustments, which work well in other markets. Beyond that, Enel X agrees that it will not always be possible to guarantee that a DRSP's portfolio forecast (i.e. its portfolio baseline – as the sum of individual baselines) will exactly match its actual consumption ahead of a dispatch interval. However, this is not likely achievable with any resource. Enel X questions whether the risks of this are any different to what occurs currently with semi-scheduled generators, scheduled generators, and presumably scheduled load. At present, the SCADA data submitted by scheduled generators provides AEMO with a reasonably accurate view of the levels at which these generators are operating ahead of a dispatch interval than the information submitted for forecasting purposes. While we do not consider that SCADA-level granularity is necessary for flexible loads participating in a wholesale demand response mechanism, there are a range of ways in which real-time information about the volume of demand response available to be offered can be communicated to AEMO. Importantly, this can be communicated on a portfolio, rather than individual load, basis. These solutions should be explored before ruling out a scheduled "negawatts" approach. **2. The concern that DRSPs would have an incentive to inflate their baseline ahead of a dispatch interval under a scheduled "negawatts" approach can also be addressed.** There is sufficient evidence to suggest that the baseline methodologies used in mature demand response markets overseas are robust to gaming. For example, where dynamic baseline methodologies apply, day-of adjustments aren't permitted immediately before the dispatch interval. Rather, adjustments are calculated over a window (typically a few hours) leading up to the time at which the participant receives the dispatch instruction. This means that, to inflate the baseline, a customer would have to increase their consumption for multiple hours – at considerable cost – on the off-chance that prices will later rise to a level that would cause it to be dispatched. Such a methodology, combined with regulatory oversight, undermines any

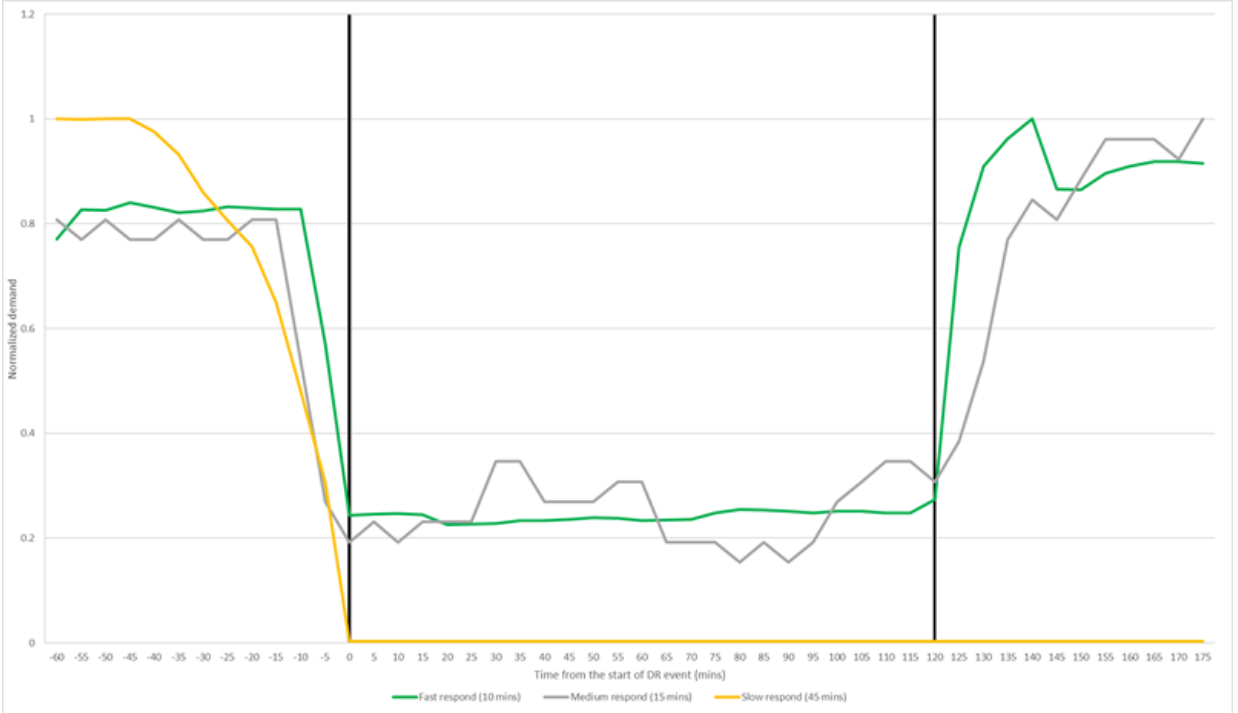
		incentive to game. Further analysis of these methodologies should be conducted before ruling out a scheduled "negawatts" approach. **3. A scheduled load approach would require a complex retailer-DRSP relationship.** The DRSP would presumably need to have visibility of the whole load at the customer's site, not just the portion that is flexible, in order for the customer's load requirements to be accurately scheduled. It would also presumably need to have an arrangement with the retailer that allows it to buy electricity on behalf of the customer during demand response intervals. This is likely to be a complex contractual arrangement to negotiate and to put into practice. Scheduling 'negawatts' allows the DRSP to only have control over the flexible portion of a customer's load, and does not require it to have any contractual relationship with the customer's retailer. **4. Only a handful of the largest customers have the sophistication and stability of operations to accurately forecast their load.** Under a scheduled load approach, a customer must be spot-exposed. They, or their aggregator, must then buy hedges to exactly match their expected demand, such that they profit when they consume less than their expected demand. The effect of this approach, however, is that participation would only be open in practice to customers whose demand is very level predictable (i.e. smelters) and whose sophistication and risk tolerance is such that they are willing to take on spot price exposure and engage in derivative trading (unless an aggregator does it for them). In Enel X's experience, this works for some customers, but not the vast majority of commercial or industrial loads, or smaller customers. Enel X notes that there are currently only eight scheduled loads in the NEM – four of which are required to be scheduled under AEMO's interim arrangements for utility-scale storage, and three of which are pumped hydro facilities that are "normally-off", meaning they do not operate unless the spot price is lower than a nominated level. As noted by the AEMC in its final determination for the *Non-scheduled generation and load in central dispatch* rule change request, that most loads choose not to be scheduled indicates that they do not consider that the benefits of being scheduled outweigh the associated costs. As the South Australian Government noted in its rule change request, the lack of a mechanism for portfolio demand response, and the fact that many consumers do not have the capacity to manage their demand at all times, limits consumers' ability to take advantage of demand response offerings. This also explains why there are so few scheduled loads in the NEM. The costs of becoming scheduled would be incurred regardless of whether the load is required to be scheduled for every dispatch interval or only those in which it wishes to offer demand response. This point was also made by the AEC in its rule change request.

		5. Similar approaches in other jurisdictions have not brought about similar benefits. In May 2014 the New Zealand Electricity Authority implemented the "dispatchable demand" regime, the objective of which was to enable demand-side participants to participate more fully in the wholesale electricity market. The framework is voluntary but requires any participant to essentially act as scheduled loads do in the NEM. Only one business has participated in the scheme – a large energy user that consumes about 500GWh per annum. In a post-implementation review published in July 2018, the Electricity Authority concluded that "the low uptake of the scheme means the benefits are likely to have fallen short of implementation costs, and future benefits are unlikely to be material without refinement to encourage more participation in the scheme." The Electricity Authority concluded that effective demand response program relies on an understanding of prospective participants' business and energy needs. It also concluded that "reduced complexity and compliance, both real and perceived, may go a long way towards increasing participation" in a demand response regime.[6] All FERC-regulated wholesale markets in the USA allow demand response to participate in energy markets and earn revenue based on the "negawatts" provided. Fundamentally, offering wholesale demand response is different to bidding to buy energy. Customers need to be able to do both, and there are benefits in them doing so. For clarification, Enel X is not opposed to scheduling per se. This is commonplace in other markets and Enel X agrees there is value in scheduling to make demand response capability more transparent to AEMO. Rather, as explained in detail above, Enel X supports a "scheduling negawatts" approach over a "scheduling load" approach. Enel X also seeks clarification that demand response could be offered and scheduled on a portfolio, not individual load, level.
7C	Do stakeholders consider the obligations placed on scheduled load remain appropriate in the context of demand response? If not, how might they be changed to better allow loads to participate in central dispatch?	As above, Enel X does not support requiring demand response to participate in the NEM as a scheduled load. Requiring demand response providers to comply with all of the obligations of scheduled loads would severely limit the number of DRSPs seeking to participate in the market and thereby limit the significant benefits of wholesale demand response outlined in the AEMC's paper. The obligations proposed to apply to demand response providers (as scheduled loads) are essentially the same as those that apply to scheduled generators. However, demand response is an inherently different service to that provided by scheduled generators, whose business model reflects the primary purpose of generating electricity to sell into the NEM. A load does not exist for the primary purpose of buying electricity or offering demand

[6] See: https://www.ea.govt.nz/monitoring/enquiries-reviews-and-investigations/2017/post-implementation-review-of-dispatchable-demand/

		response. Rather, its purpose is to carry out whatever business functions or personal uses that are of value to the user. Demand response is a recognition by an energy user that it can create additional value by being more flexible with when and how much it consumes. Subjecting parties who wish to offer wholesale demand response to the same obligations as scheduled generators fundamentally misunderstands the nature of demand response. It may also explain why so few NEM participants have volunteered to be classified as scheduled loads. A requirement to only be scheduled for those intervals where the DRSP intends to offer demand response would reduce the operational complexity of having to bid into every dispatch interval (which will be every five minutes from 1 July 2021). However, we note that currently there is a requirement for scheduled loads to have "appropriate communications links". While not specified in the NER, in practice this is a requirement to have a SCADA link. A market that requires DRSPs to make the significant investment in SCADA links for loads that might only participate during high price events is unlikely to be an attractive one to enter. Markets overseas that have significant levels of wholesale demand response participation (N.B. as "negawatts", rather than as scheduled loads, as there are no examples of the latter) tend to have developed appropriate communication requirements, recognising that the cost/benefit trade-off is very different for large aggregations of small loads than it is for traditional centralised generators. Enel X expects that there will be very few participants in a wholesale demand response mechanism if the AEMC pursues a scheduled load approach. Considerable changes to the applicability of the scheduled load requirements to DRSPs would be needed to encourage any market participation in such a mechanism.
7D	Which information provision processes should a demand response provider participate in, i.e. pre-dispatch, ST-PASA, MT-PASA?	DRSPs should be able to provide how much response it expects to be able to provide across its portfolio. Enel X currently does this for its FCAS portfolio. While complex, particularly for some customer types, it is reasonable to expect DRSPs to do this ahead of time. Under a demand response mechanism, DRSPs would not provide information about what the customer's demand would be in the absence of its demand response, i.e. the counterfactual demand. As noted in the AEMC's paper, this is something that AEMO does already, and it is not unreasonable to conclude that retailers are increasingly much better placed to do this on behalf of their customers. DRSPs will lack full visibility of the load and will have no ability to provide such information. This reinforces the importance of separating consumption from flexibility, and of not adopting a scheduled load approach.
7E	How should compliance with dispatch targets and the causer pays procedure apply to demand response providers?	<u>Compliance with dispatch instructions</u> Enel X recognises the importance of compliance with dispatch instructions to support supply-demand balance in the NEM, but agrees with the AEMC that it will be challenging for most loads to accurately follow a linear dispatch trajectory. It is also important to recognise that not all loads will be able to provide their full dispatch capability immediately following the receipt of a dispatch instruction. Below is a graph showing the response times of three different

customers in Enel X's portfolio. The fast-responding load (green line) is a cold storage facility that is curtailed automatically; the medium-responding load is a flour mill that is curtailed manually, and the slow-responding load is a water treatment plant that is curtailed manually. The demand response mechanism should be designed to accommodate the capabilities and characteristics of all load types to support participation and competition, and thus maximise the potential benefits of the mechanism.



Further, DRSPs will likely always include some 'buffer' in their portfolio to account for any unexpected miscommunication or inaction by the loads in its portfolio, which may result in the DRSP over-delivering on the quantity of demand response it was dispatched for. Penalties for small over-delivery of demand response are likely to limit participation in the mechanism.

Alternatives to requiring demand response to follow a linear dispatch trajectory include:

- a requirement for DRSPs to meet their dispatched quantity *on average* over the dispatch interval
- adopting a complementary approach to that which applies to semi-scheduled generators – that is, the DRSP is deemed to be compliant as long as it delivers *at least* as much response that it is dispatched for.

		Enel X supports the latter, as it more closely reflects DRSPs' actual abilities. The NEM's six contingency FCAS markets already operate this way. Regulation FCAS costs Under the current arrangements, contribution factors for market generators and market customers are determined based on assessed deviations from a reference trajectory – either expected dispatch or expected consumption – that are calculated every four seconds. Enel X does not consider it necessary or appropriate to require DRSPs to provide four second data. As noted above, such a requirement is likely to be incredibly costly and outweigh any potential benefits of participation in a demand response mechanism. Some markets (e.g. PJM) do not have any telemetry requirements for demand response, while others have one-minute or five-minute requirements, which are far more manageable. Thus, if DRSPs are to be liable for regulation FCAS costs, an alternative means to calculating contribution factors may be required. As noted above, not all loads are likely to be able to follow a linear dispatch trajectory (unless coupled with storage capability). Requiring loads to follow a linear dispatch trajectory like generators, and exposing them to regulation FCAS costs in relation to a deviation from that trajectory, would likely diminish the potential benefits of the mechanism and thus reduce participation.
Question 8: Reducing barriers to a range of demand response		
8A	To what extent will these mechanisms facilitate more demand side participation throughout the NEM?	Demand response mechanism Enel X supports the development of the demand response mechanism proposed in the PIAC/TEC/TAI and South Australian Government rule change requests. Such an approach will enable the NEM to truly reveal the least-cost combination of supply and demand side options, to the benefit of all electricity consumers. It is the model most likely to facilitate more demand side participation in the NEM, and meet the objectives set out in the AEMC's assessment framework for the rule change request. Specifically: - It promotes *competition and consumer choice* by enabling those businesses with the skills and commercial interest in capturing the value of wholesale demand response to access that value on behalf of consumers. Enel X understands that this mechanism would not preclude the participation of retailers. This is important. Consumers should be able to choose whether to buy a demand response product from their retailer, from a third party, or not at all. The greater the levels of participation allowed in the mechanism, the greater the level of competition to offer demand response products, which is likely to result in lower wholesale costs and better outcomes for all consumers. - It supports a *resilient framework* by lowering the barriers to entry for businesses with the skills and commercial interest in capturing the value of wholesale demand response to access that value on behalf of

		consumers. This model also ties in well with MASP framework, which allows for participation in the FCAS markets without also having to be the FRMP at the connection point. - It is *non-distortionary*, and is actually likely to improve the ability of the NEM to provide for the least-cost combination of supply-side and demand-side options to meet demand at the lowest cost. Similarly, it would not distort the ability for demand response to be used in other parts of the supply chain. Enel X expects that a wholesale demand response mechanism, with the highly visible participation it brings, will reduce the need for AEMO to procure and activate RERT resources. It will also serve to activate the significant amount of latent demand response capability in the NEM and enable it for participation in other demand response frameworks, for example through the provision of FCAS and network demand response. - It would promote significantly more *transparency* of market participation and market outcomes by requiring demand response to be scheduled and explicitly valued in the central dispatch process. Unlike under the current arrangements, this approach will expose much more information about how the demand side responds to price, which is likely to promote efficient market outcomes to consumers' benefit. - It *allocates the risk* of market participation to the parties best placed to manage it – specifically those businesses who have the skills and commercial interest to manage those risks to their benefit, and to the benefit of their customers. - The potential benefits of a wholesale demand response mechanism are well recognised, have been demonstrated in markets around the world, and are likely to be much greater than the associated *administrative and implementation costs*. Enel X's detailed views on implementation costs are set out in the response to question 9A. Wholesale demand response through independent aggregation has been working in a number of international markets for some time, and can work in the NEM. Many of the issues raised in the consultation paper have been raised, and addressed successfully, in these markets. While the market rules and conditions are different in each market, the underlying premise of unbundling energy flexibility from energy supply to support effective competition remains the same, as do the benefits. <u>Demand response register</u> This model is unlikely to deliver the benefits of a competitive demand response market that the AEMC describes well in its consultation paper. Enel X's understanding of the premise underlying the AEC's rule change request is that *only* retailers should be able to participate in wholesale demand response, because it believes that the costs of allowing independent aggregators to access this value would outweigh the benefits. However, limiting the market to participants who have no natural incentive to offer demand response products, and have historically not done so to any significant degree, is unlikely to result in consumers having access to any more demand response products than are currently present in the NEM. And, as noted by the AEMC, not all retailers would have capacity or expertise to

		offer demand response products. These outcomes are inconsistent with the *consumer choice* aspect of the AEMC's assessment framework. This model would give retailers the ability to veto any demand response service offered to any of their customers. It is not clear whether or how good faith negotiations could be enforced. Where an agreement could be reached, we would fully expect the retailer to exploit their monopoly position as gatekeeper to the customer's flexibility by imposing charges on the aggregator that capture as much of the created value as possible. It is also not clear whether it is legal or practical to require a retailer to take on or agree to a contractual arrangement to which it was not originally a party. This model would also give retailers considerable competitive advantage over independent providers: there would be nothing to stop a retailer offering the customer a similar service at just below what the DRSP is offering during the "good faith" negotiations. These issues create a significant barrier to entry for non-retailers, which is inconsistent with the *competition* and *resilient framework* aspects of the AEMC's assessment framework. This model is not likely to result in any increased competition for the provision of demand response services, as independent aggregators would have considerably less ability to engage customers than under the alternative models. The AEC's main argument for a demand response register appears to be that it would be easy to implement. Enel X agrees that a proper wholesale demand response mechanism would be more complex and would involve more costs. However, the costs need to be traded off against the potential benefits. It would be a shame if the AEMC ignored the considerable benefits of a proper wholesale demand response mechanism on the basis of costs that are yet to be defined. Enel X would argue that the benefits of the AEC's proposal are likely to be so small as to not even justify the costs of pursuing it. Enel X is not aware of any international jurisdiction where such an approach to wholesale demand response has been taken up or succeeded. <u>Separate demand response market</u> In the absence of detailed information about how the co-optimisation between a separate wholesale demand response market and the NEM would occur, Enel X is not convinced that its benefits outweigh the associated costs, for the following reasons. - This model imposes direct costs on consumers and retailers who may not even be participating in the market. - Rather than purchasing and hedging based on customers' expected consumption, the retailer would need to somehow do this on its expectation of how the customer will respond during demand response events. Presumably this would require some relationship between the retailer and the demand response provider,

		or at least visibility of the customer's contract to determine the expected quantity of demand response to be provided and what the trigger condition is for activation. - The model assumes retailer forecasting of customer load and NEM procurement on that basis. Enel X's understanding of the current arrangements is that AEMO forecasts customer load and dispatches sufficient generation/ scheduled load to meet it, with retailer billing occurring on the basis of actual consumption after the fact. - For the reasons set out in response to questions 21 and 22, Enel X does not consider that this option will be quicker or easier to implement than a wholesale demand response mechanism.
Question 9: Costs of implementing mechanisms		
9A	What is the extent of the upfront costs that would be imposed on participants to introduce the proposals outlined in the rule change requests? Please provide evidence or data to substantiate these views where possible.	Enel X agrees with the AEMC that demand response providers and their customers will incur costs to install equipment and set up systems to participate in any mechanism for wholesale demand response Regardless, these costs are largely beyond the remit of the NER/NERR and are simply a factor that businesses and consumers consider before entering into a contractual arrangement for demand response. That is, demand response providers and their customers will proceed with an investment if it is clear that the benefits will outweigh those costs. Decreasing technology costs, and the ability to 'value-stack' the provision of wholesale demand response with other services (e.g. energy, FCAS, emergency reserves) brings lower per unit costs to the provider and greater benefits to the consumer. Careful consideration of the technological requirements imposed on customers to participate in the mechanism is need to make sure that the potential benefits of participation are maximised. Enel X's experiences in international markets suggests that the benefits to participating consumers and to demand response aggregators outweigh the costs to enable demand response capability. However, as noted above, Enel X would argue that it is not the capital costs associated with the establishment of a portfolio, or a lack of potential benefits, that is resulting in low levels of wholesale demand response in the NEM to date. Rather, it is a lack of incentives for retailers to offer wholesale demand response services, and a regulatory framework that prohibits the provision of this service by parties other than retailers. <u>Demand response mechanism</u> Enel X does not have a clear understanding of what retailer and AEMO system upgrades would be required to enable the implementation of a demand response mechanism, and which of these upgrades would be in addition to those required ahead of the move to five-minute settlement and global settlement. Under a centrally-determined baseline approach, Enel X does not expect the implementation costs for retailers to be significant. If AEMO and retailers are unable to provide detailed costing information, it may be prudent to develop a mechanism that applies to large customers first (presumably requiring fewer system upgrades) and then moving to incorporate small customers once the benefits of the mechanism are tested. Enel X does not consider it is in

		the long-term interests of consumers to reject a wholesale demand response mechanism on the basis of costs that are yet to be substantiated. Demand response register The consultation paper notes that DRSPs will likely incur capital costs to establish and operate a portfolio of demand response. While this is true, it is the DRSPs' responsibility to minimise these costs and trade them off against the potential benefits of the mechanism. Enel X would be unlikely to offer wholesale demand response under the proposed demand response register, as it appears that these costs would not be outweighed by any potential benefits of the proposal. What is not recognised in the paper is the cost to DRSPs associated with the various regulatory requirements of the model. The costs of overly onerous regulatory requirements that cannot be minimised by DRSPs will erode the benefits to consumers and the broad provision of wholesale demand response. Under a demand response register, the regulatory burden is not explicit, but is implicit in the required negotiation between retailers and DRSPs. This is unlikely to be a straightforward process given: - retailers' control over the negotiation process as the only parties able to access the full value of wholesale demand response - retailers' incentive to prevent their customers from entering into an arrangement with another party, when it is a service that they themselves can offer, or which would compete with the activities of another part of their business. Separate demand response market In the absence of further detail on how a separate demand response market would be designed, it is not clear what the associated costs for AEMO or participants would be, and whether these would be greater or less than those associated with an in-market demand response mechanism.
9B	Will demand response providers have sufficient information regarding expected revenue to make commercial decisions regarding the cost/benefit trade-off to participate in the mechanism?	The volatility of wholesale electricity prices and the lack of active demand side participation in the NEM at present gives Enel X confidence that there is significant value in enabling demand response to participate in the wholesale market. The most obvious business model for a DRSP would be to sell caps in relation to its demand response portfolio (like a peaking generator does), which are generally set at $300/MWh. This provides an indication of the potential value available to demand response. Enel X's experiences in international markets has shown the significant benefits to consumers, demand response aggregators and the broader market by more explicitly enabling demand response to participate in the central dispatch process alongside generators. However, the costs of overly onerous regulatory requirements that cannot be minimised by DRSPs will erode the benefits to consumers and the broad provision of wholesale demand response. As noted previously, other jurisdictions have started out with similar objectives but have designed schemes that are so administratively complex or costly that no-one participates. Enel X is confident that

		this can be avoided if the AEMC draws on the considerable experiences of other jurisdictions that have encountered, and addressed, many of the issues it is now grappling with.
Question 10: Reducing extent of upfront costs		
10A	Do stakeholders have suggestions for ways these upfront costs could be minimised? E.g. could there to be savings by making changes at the same time as other systems changes?	As above, Enel X does not have a clear understanding of the costs that would be imposed on retailers and AEMO under each of the proposals, but is keen to understand the incremental costs over and above what they are required to do to implement five-minute settlement and global settlement. The billing and settlement functionality required for wholesale demand response is likely to be very similar to that which is currently required for generators in embedded networks. In such an arrangements, retailers subtract the metered 'sub-consumption' from the parent meter to determine the net load for billing purposes. Although, under a demand response mechanism, retailers would need baseline or "virtual" consumption instead of metered consumption. It is also important to remember that customer participation in a wholesale demand response mechanism is likely to be gradual. Retailers will not be forced to incur significant costs to upgrade their billing and settlement systems to accommodate wholesale demand response by their entire customer base, in the early stages of the mechanism. They can take a more manual approach while the number of participating customers is small, and implement a fully-automated approach at a time that is convenient for them, and in a way that is reflective of participation levels. However, synchronising the implementation of a wholesale demand response mechanism with that of five-minute settlement (a far more costly change) would seem an obvious approach.
Question 11: Indirect costs of proposals		
11A	What is the likely extent of any indirect costs imposed through these proposals?	The paper notes the potential for baselines to credit an incorrect quantity of demand response in market settlement as an indirect cost of a wholesale demand response mechanism. Under many baselining methodologies there will be a risk that a quantity of demand response will be "over-rewarded". But the converse is also true – that is, there be an equal risk that a quantity of demand response will not be accurately rewarded for the response it provided. This issue is not new – jurisdictions around the world have asked similar questions when weighing up the costs and benefits of enabling wholesale demand response. The potential risks of "over-rewarding" demand response can be minimised by choosing a baselining methodology that strikes an appropriate balance between accuracy and simplicity, and proper information provision between the DRSP and AEMO. As noted by the AEMC in the consultation paper, an appropriate baselining methodology will cancel out the over- and under-valuation of demand response over the long term.
11B	How could any such costs be minimised?	See above.

Question 12: Risk allocation for baselines		
12A	Do stakeholders have views on how risks and costs can be best allocated under a baseline used for demand response?	Enel X has considerable experience working with international jurisdictions on appropriate baseline methodologies. In Enel X's experience: - *centrally-determined* baselines have been adopted by every market that has a non-trivial level of demand response participation - Singapore is not a good market to consider when exploring *centrally-administered* baselines, as this market design has resulted in very little market participation - any required negotiation between the demand response aggregator and the retailer, such as that to calculate a *disaggregated* baseline, is unlikely to be successful, as has been shown in Germany.
Question 13: Retailer participation		
13A	Is it necessary to place an obligation on retailers to participate in the mechanism for it to address the issues raised by the proponents?	Yes, we agree with the AEMC's conclusions that, under a wholesale demand response mechanism: - customers of all electricity retailers should be free to choose whether to engage a third party to offer demand response into the wholesale market - retailers must not be able to opt out of the mechanism on behalf of such customers - retailers must be required to change their billing and settlement systems to accommodate customer billing on baseline electricity use.
13B	Are there additional obligations these proposals would place on retailers, and do they differ between the proposals?	Of the three options put forward in the consultation paper, Enel X is of the view that the demand response register is least likely to resolve the identified issues or be in the long-term interests of consumers. If this option is to be pursued, Enel X would ask that much stricter obligations be placed on retailers to allow their customers to access demand response services provided by third parties (i.e. beyond a requirement to negotiate in good faith), as it is not clear whether or how good faith negotiations can be enforced. As noted above, it is unclear to Enel X whether it is legal or practical to require a retailer to agree to a contractual arrangement to which it was not originally party.
Question 14: Embedded generation and storage		
14A	Do stakeholders have preliminary views about the ability for the proposed mechanisms to accommodate embedded generation, in the form of reduced consumption of electricity from the grid in high price periods?	Enel X agrees with the AEMC's preliminary observation that a demand response mechanism should be designed to enable increased consumption during low-price periods as well as decreased consumption during high price periods. Ideally, the mechanism would be technology neutral, so all that matters is what volume of response is provided (whether an increase or decrease in consumption), not how the response is delivered. However, it is

		fair to say that the existing baseline methodologies around the world were not designed with energy storage in mind. At present, the primary driver for installing a storage system (particularly residential customers) is to maximise self-consumption by storing excess rooftop PV output during the day and using it at night. Battery operation is largely a function of the associated retail tariff and PV output. With some data, this is a relatively easy profile to predict. However, given the increasing uptake of these technologies and the changing drivers for their uptake, it is an issue that will need to be explored further and addressed. Enel X notes that the US Federal Energy Regulatory Commission, and the ISOs it regulates, have been considering the participation of energy storage in energy, ancillary and capacity markets.[7]
14B	Do stakeholders have preliminary views about the ability for the proposed mechanisms to accommodate, as demand response, increased consumption during low price periods (whether due to charging batteries, increasing production or any other action by the customer)?	See above.
Question 15: Thresholds for participation in a mechanism		
15A	What thresholds, if any, should apply to participation in the mechanism for individual consumers and aggregated portfolios? For example, large consumers as opposed to small consumers; a MW size threshold?	Large customers are likely to be better equipped to participate in central dispatch than smaller customers. However, while some large customers may choose to participate directly, most customers (whether large or small) will choose to cede such a responsibility to a third party aggregator under a contractual arrangement. Further, a demand response provider will need a portfolio of considerable size before the benefits of wholesale participation stack up. Enel X notes that the current threshold for wholesale market participation (both energy and FCAS) is 1 MW. Pursuing a MW participation threshold, as opposed to a small customer/large customer divide, will likely drive more flexibility for demand response providers and greater competition.
15B	Should there be thresholds at which different scheduling obligations apply?	Under the current NER, the scheduling threshold that normally applies to registered generators is 30MW, but it is not clear whether there is a similar threshold above which loads are required to be scheduled. Enel X does not have a view on this stage, but considers that the AEMC should make a decision on whether demand response should participate as scheduled load or scheduled negawatts before considering any thresholds at which the various obligations should apply.

[7] See: https://ferc.gov/media/news-releases/2018/2018-1/02-15-18-E-1.asp

Question 16: Implementation timeframes		
16A	How long do stakeholders think would be reasonably required to implement the proposals as set out in the rule change requests?	The AEMC needn't re-invent the wheel on key issues such as baselining and scheduling. There are plenty of lessons to be learnt from international markets that have grappled with, and resolved, similar issues. These issues have also been considered by AEMO and ARENA under its demand response trial. Enel X would be happy to provide contacts and further information on its international experiences if this would assist. Nevertheless, Enel X notes that there are complexities associated with designing appropriate consumer protections for small customers, and that significant work would be required to develop and apply baselines for small customers. As such, it may be appropriate to implement the mechanism for large customers first (and aggregations above a certain MW threshold) and extend participation over time as the necessary system changes occur and the benefits for small customers become clearer. It may also be appropriate for the mechanism to include a soft launch or transitional period. This would give AEMO, retailers and DRSPs the ability to test and improve on various design elements, such as measurement and verification and dispatch processes before full market implementation.
16B	How could the implementation timeframe be reduced? What trade-offs may need to be made to the design to achieve this?	The consultation paper suggests that the implementation timeframe may be reduced if DRSPs were required to convey metering data and baseline data to the retailer, instead of the retailer having to change its billing and settlement systems upfront. Such an approach may require DRSPs to be accredited to read meters and have the organisational capability to do so. It would also require these parties to have visibility of the entire load behind the connection point, not just the controllable load used for demand response. Enel X seeks further clarification on this proposal. It appears to assume that the mechanism would not adopt a centrally-determined approach to baseline calculations and settlements. Under a centrally-determined baseline approach, presumably AEMO would calculate baselines and convey this information to retailers via MSATS as it does currently for other metering and settlement information. This would avoid any need to establish separate information flows between aggregators and retailers, which may be complex and costly.
Appendix A – Wholesale demand response mechanism		
Question 17: Centrally determined baselines		
17A	How important is it to design against the possibility for bias and gaming?	The AEMC puts forward two ways in which a participant could game a baseline: 1. A DRSP could artificially inflate the baseline, or the retailer could deflate it, to their own benefit. 2. A DRSP might choose to only offer demand response when the baseline is inaccurately high, which would create an average error in the baseline. Enel X agrees that retailers and DRSPs have a natural incentive to inflate or deflate the baseline to their benefit. This risk has been recognised in international markets and largely addressed by using baseline methodologies

		that calculate the baseline over a period that discourages or devalues any attempt to change the baseline consumption. As set out in response to question 7b, there is sufficient evidence to suggest that the baseline methodologies used in mature demand response markets are robust to gaming. For example, where dynamic baseline (e.g. high X of Y) methodologies apply, day-of adjustments are not performed using data from immediately before the dispatch interval. Rather, adjustments are calculated over a window (typically a few hours) leading up to the time at which the dispatch instruction was issued. This means that, to inflate the baseline, a load would have to increase its consumption – at its own cost – for multiple hours in the off-chance that prices will later rise to a level that would cause it to be dispatched. Such a methodology, combined with regulatory oversight, undermines any incentive to game. The second issue can likely be addressed by information provision between the DRSP and AEMO regarding the actual level of demand response available in near real-time, and proper enforcement of compliance with the regulatory framework after the fact, as explained in response to question 7b.
17B	How can a baseline methodology appropriately align incentives such that the risk of systemic bias is minimised?	In Enel X's view, good baseline design is driven by adherence to three fundamental principles: - **Accuracy.** Customers should receive credit for no more and no less than the curtailment they actually provide. A baseline methodology should use available data to create an accurate estimate of what the customer's consumption would have been in the absence of a demand response event. - **Simplicity.** The baseline methodology should be simple enough for all stakeholders to understand, calculate, and implement, including end-use customers. In addition, it should be possible to determine the baseline in advance of or during demand response events, so that it can be used to monitor curtailment performance in real time. - **Integrity.** A baseline method should not include attributes that encourage or allow customers to distort their baseline through irregular consumption, or allow them to game the system. Enel X encourages the AEMC to read EnerNOC's white paper on baseline design, which sets out how policymakers can design baseline methodologies that adhere to these three principles.[8] Baselines that are calculated using an "X of Y" methodology are by far the most prevalent in other markets, signalling that this approach has the greatest potential to strike an acceptable balance between the three objectives above. A best practice when such a methodology is used is to apply day-of adjustments to more accurately reflect the load conditions of the event day. Exclusion days can also be considered to improve the

[8] See: https://library.cee1.org/sites/default/files/library/10774/CEE_EvalDRBaseline_2011.pdf

		accuracy of a high X of Y baseline by replacing holidays, dispatch days or atypical consumption days (for example due to equipment maintenance) from the baseline calculation. The application of dynamic baseline methodologies, and enforcement of participant behaviour, is likely to minimise the risk of systemic bias.
Question 18: Accuracy of baselines		
18A	How important is it that the baseline methodology is able to accurately estimate consumption?	As above, Enel X considers it to be very important that the baseline methodology is able to accurately estimate consumption. There are baseline methodologies that take variables such as production schedules, temperature, day of the week, etc, into account explicitly, and some that make those methodologies available only for unusual loads – that is, those loads for whom the default X of Y baseline methodologies do not work. Most markets have settled on simpler approaches based only on meter and event data because they have been found to work better, and be less complex to administer. In its rule change request the AEC argued that "standardised baseline methodologies are unlikely to be applicable for many commercial and industrial loads". While some large industrial loads do not work well with baselines because their load is highly variable, in our experience, these loads are a very small minority. These customers are also the ones most likely to engage directly with the wholesale market, for example by taking spot price exposure. In practice, it is unlikely that DRSPs or retailers would sign up very variable loads for participation in a demand response portfolio, due to the potential unpredictability of response during an event. However, using regulation to restrict participation in the mechanism to only those loads that have a predictable consumption pattern: - ignores the considerable international evidence that baseline methodologies can be developed for more variable loads - would stifle the development of new baseline methodologies for such loads - would likely limit the level of participation in the mechanism. It is worthwhile examining the approaches to this issue taken in PJM and in France. PJM has adopted a number of default baseline methodologies, depending on the type of program (i.e. energy, ancillary services or capacity) and the type of product. A baseline accuracy test is carried out for a demand side resource by applying the default methodology to historical meter data, and calculating error metrics. If the default baseline methodology passes this test, it must be used. If it does not, then the participant must adopt whichever baseline methodology passes the test and has the highest accuracy. If none of the approved methodologies passes the test for that particular load, then there is a process to gain approval for a new methodology that passes the test.

		In France, all sites use a "simple rectangle" baseline by default. Participants can choose from one of four profile baselines, so long as they pass an accuracy test. Alternatively, they can choose to nominate baseline values (much as a scheduled load would do), but only if they can show that their nominated values pass the same accuracy test, and a separate test to show that they are unbiased. Both jurisdictions have recognised that it is important for the market to be dispatched and settled sufficiently accurately, but have taken care to ensure that as many customers as possible are able to participate.
18B	What administrative mechanisms would improve baseline accuracy without imposing excessive burdens? For example, regular review of baseline methodologies by independent experts, or cross-checking against consumption data from customers that are similar to the demand response provider but are not engaging in demand response.	Faith in the integrity of a wholesale demand response mechanism will rely on appropriate checks and balances being put in place, market rules being enforced, and market outcomes being regularly reviewed. Enel X agrees it may be appropriate to review the chosen baseline methodology (methodologies) after a period of time to assess whether it is striking an appropriate balance between the principles described above, and achieving the intended benefits of the mechanism. Audits of portfolio performance can be used to inform such reviews.
18C	Can a baseline accurately account for embedded generation and other dynamic resources that might exist behind the meter?	See responses to question 14.
18D	Should a wholesale demand response mechanism apply only to the types of customers for which baselines can be accurately set, and if so, what types of customers should be eligible?	See response to question 18A.
18E	How should long-term or permanent changes in a customer's overall level of demand be addressed in baselines? For example, factories may add or retire production lines; households may increase or decrease in size, and may install or remove equipment such as batteries, pool pumps or solar panels.	While they may be more complex to administer than static baselines, high X of Y methodologies (and other dynamic approaches) are much better able to address long-term or permanent changes in a customer's overall demand than static approaches. This is because the customer's baseline is calculated based on its consumption over a limited number of preceding days, rather than set statically over an annual or other period. Hence any changes in overall consumption will quickly be reflected in the baseline. It is also for this reason that dynamic baselines are better able to account for fluctuations in consumer load between seasons.

Question 19: Settlement under the wholesale demand response mechanism		
19A	Do stakeholders consider one of the settlement options outlined to be preferable? How would this approach to settlement impose costs and risks on market participants?	Enel X supports the settlement option described in scenario 3 in the consultation paper. Under this approach the value of wholesale demand response is allocated directly to the DRSP as the party who has created that value on behalf of the customer. Settling the retailer on the customer's baseline consumption during periods in which the customer responded to an event is also likely to be less risky for retailers. That is, retailers will buy from the market and sell the customer essentially what they were expecting to, such that the customer's response to an event has no impact on them. For the reasons set out in response to questions 8, 9 and 23, a settlement approach that requires a DRSP to negotiate a contractual relationship with the retailer to share that value is unlikely to encourage the development of a competitive market for wholesale demand response.
Question 20: Other considerations for a wholesale demand response mechanism		
20A	Do stakeholders have views on these other considerations set out in the appendix?	Response to dot point 1 in section A.3: If demand response is to participate in the mechanism as scheduled load, then yes there would possibly be circumstances where the demand response provider would be responsible for 'selling' electricity to the customer in the event the customer does not reduce its consumption in response to a signal. Enel X is unclear on what implications this has for the regulatory framework, and whether this constitutes a "multiple trading relationship", which is currently not permitted under the rules. A similar issue may arise under any scheduling framework (whether as load or as "negawatts") where storage is involved, for example if the DRSP schedules an increase in load to charge a storage system during low price periods. The current embedded network arrangements could be drawn upon to address this issue. The creation of an embedded network may be one way to address this – the retailer is responsible for the parent connection point and determines the customer's net load, while the DRSP has responsibility for the child connection point, through which it can offer and charge the customer's flexible load. It is important to note that, under any scheduling framework, a demand response aggregator will put in place strategies to mitigate the potential for non-response. This is what Enel X does for its FCAS portfolio in the NEM and its operations overseas – we constantly monitor the load under our control to make sure that we can deliver what we offer, with a buffer in the event that customers cannot or do not respond. The risks of not complying with a dispatch instruction should lie with the participant, not with AEMO. It is appropriate for the AER to enforce any non-compliance with dispatch instructions as it does for other NEM participant but, as set out in response to question 7e, what constitutes a demand response resource's non-compliance with dispatch instructions should be carefully considered. Response to dot point 4 in section A.3: As raised in our response to question 2a, Enel X has been made aware of retail contracts that prohibit a customer from entering into a load curtailment arrangement with a third party without the retailer's consent. Any such contracts would need to be amended, and these amendments enforced,

		prior to the commencement of wholesale demand response mechanism so that these customers could participate without their retailer having a veto.
20B	Are there other considerations not raised that should also be considered when designing a wholesale demand response mechanism?	Designing and implementing a wholesale demand response mechanism is an achievable and beneficial goal. The issues raised by the AEMC in its consultation paper and by the rule change proponents are not new. Considerable work was done by the AEMC, AEMO and other parties in assessing a wholesale demand response mechanism in 2015/16, and a great deal of input was provided by stakeholders to help address the identified issues. AEMO also now has more experience administering baselines as a result of the AEMO/ARENA demand response trial under the RERT framework. Enel X encourages the AEMC to draw on this work, and the analysis, experiences and conclusions of rule-makers in international markets. Enel X is happy to provide contacts or further information on its experiences in any of these markets, or on any other aspect of this submission.
Appendix B – Separate wholesale demand response market		
Question 21: Cost recovery for the separate market		
21A	What do stakeholders think about the proposed cost recovery arrangements for the separate market?	It is unclear that it would be efficient for all customers to fund the provision of wholesale demand response through a separate market. As noted by the AEMC, smearing these costs reduces the ability for retailers and customers to minimise their exposure to them. Explicitly capturing wholesale demand response within the existing NEM alongside generation would: - enable AEMO to truly determine the lowest-cost option to meet demand - expose the costs of wholesale demand response to those parties who are best able to manage and minimise them - avoid any cross-subsidisation of the costs of a separate mechanism by customers who may not be receiving a clear benefit from it.
Question 22: Introduction of separate market		
22A	Would the proposal set out in this appendix be faster to implement than the wholesale demand response mechanism?	Enel X is not convinced that a separate wholesale demand response market will be any quicker or easier to implement than an in-market, wholesale demand response mechanism. There does not appear to be a benefit in AEMO establishing separate systems to enable to co-optimisation of the separate market with the existing wholesale and FCAS markets. Enel X is of the view that it would be quicker and more efficient for AEMO to utilise the existing market framework and co-optimise the provision of wholesale demand response within it. This approach would also avoid the need to smear the costs of wholesale demand response across consumers.
22B	If stakeholders do not consider that it would be faster to implement, is there merit in exploring this as an	Enel X is not aware of any international markets that have pursued a separate market for demand response, except as a strategic reserve, or as a transitional mechanism to foster the development of a demand response aggregation industry to the point that it can compete in the main market. As noted in previous responses, there

	alternative to the other proposed demand response mechanisms? What are the costs and benefits that should be considered in doing so?	is considerable international experience that can be drawn upon to inform the development of an in-market demand response mechanism. Given that the intention of a separate demand response market and a demand response mechanism appear to be the same, Enel X does not consider there to be much merit in further exploring the former.
22C	Are there any additional mechanisms that could be implemented more quickly than a wholesale demand response mechanism?	While Enel X agrees there is benefit in implementing a wholesale demand response mechanism quickly, it is important that the design is right. A mechanism should not necessarily be pursued just because it is quick or easy to implement. Rather, mechanisms should be assessed based on the size of the potential net benefits to consumers. The mechanism that maximises the difference between the potential benefits and the expected costs is the one that is most likely to contribute to the long-term interests of consumers. As above, Enel X considers it important to determine the costs associated with the development of a demand response mechanism that are incremental to those being imposed for the implementation of five-minute settlement and global settlement.
22D	What are stakeholder views on the feasibility of co-optimising this separate market with the existing wholesale market?	Enel X would be interested in AEMO's views on how this co-optimisation could occur, and whether its benefits outweigh the associated costs.
Appendix C – Wholesale demand response register		
Question 23: Wholesale demand response register mechanism		
23A	What are stakeholder views on this option to facilitate demand response?	Enel X provides the following comments in addition to those set out in response to questions 8a, 9a and 13b: - The rule change request proposes that registration of a demand side activity with AEMO by a DRA would be voluntary, and that if a DRA does participate in the register then it would be required to participate in the market as a scheduled load. It is unclear what would incentivise a DRA to participate in the register. Enel X sees no benefit to a DRA to registering its activity with AEMO and, for the reasons set out in response to questions 7b and 7c, no benefit in participating in the market as a scheduled load. - The AEC proposes that DRAs be required to demonstrate that they have exercised their demand response arrangements at least once a year. The argument is that this will help to prevent DRAs from engaging in anti-competitive behaviour, for example by registering demand response arrangements for connection points where they do not regularly exercise those arrangements. Enel X strongly disagrees with this assumption. There is very little benefit to a DRA in recruiting a customer and incurring substantial upfront costs by installing the necessary equipment to enable flexibility if it has no intention in utilising that flexibility. Similarly, there is no benefit to the customer in entering into such an arrangement. If such a proposal is to be pursued, Enel X argues that a similar obligation should be applied to retailers offering demand response products. - The rule change request proposes that customers be required to inform their retailer that they are intending to enter into a demand response arrangement with a third party, and then the retailer is
23B	What do stakeholders consider the benefits of this option would be?	
23C	What do stakeholders consider to be the costs associated with this option?	
23D	Are there any implications (regulatory or otherwise) that are not raised in the discussion of this option?	

		required to negotiate in good faith with the prospective DRA on the detail of those arrangements. The administrative burden for DRAs, customers and retailers themselves under this proposal is likely to undermine any its benefits. Further, it is unclear what happens in the event that the retailer and DRA cannot negotiate a mutually agreeable arrangement (which experience from Germany shows to be likely). Presumably the customer would not be permitted to take up the demand response service it wanted to enter into, to the detriment of competition and consumer choice. - The AEC proposes that any inability for retailers and DRAs to negotiate mutually beneficially arrangements be dealt with in accordance with the dispute resolution framework in Chapter 8 of the NER. As noted previously, retailers have no natural incentive to allow their customers to participate in wholesale demand response, and thus have an incentive to frustrate any dispute resolution process. Further, large retailers are likely to be much better resourced than demand response aggregators to manage disputes, which can be very costly and resource-intensive.
Question 24: Standard wholesale demand response offer and mandatory wholesale price pass through offer		
24A	What are stakeholder views on these options to facilitate demand response?	<u>Standard wholesale demand response offer</u> *Mandatory demand response contract* A requirement for all retailers to offer a standard demand response contract to customers would potentially increase the level of demand side participation in the NEM. The role of DRAs under such an approach would presumably be to drive competition by offering different or lower-priced demand response services than the retailer's standard offer. While this approach may support innovation, it still does not address the fundamental issue with the AEC's proposal – that retailers have considerable control over a customer's ability to engage any party other than their own retailer for a demand response service. Further, there would appear to be nothing stopping a retailer pricing at just below what a third party aggregator offers a customer. This approach also fails

		to acknowledge that not all retailers would have the capability or commercial interest in offering demand response products. *Standard demand response contract as a tool to facilitate negotiations* Enel X agrees that a standard wholesale demand response contract has the potential to simplify the negotiation process between a DRA and a retailer and reduce transaction costs for all parties, when compared to the proposal put forward by the AEC. However this approach is unlikely to satisfy the NEO because: - it would stifle innovation by both retailers and DRAs if the only way they can reach agreement is to default to the standard contract - presumably under this approach retailers would still have the ability to veto the contract if it is "materially inconsistent with the new FRMP's business strategy, systems or processes" – something that would be very hard to disprove – to the detriment of competition and consumer choice. <u>Mandatory wholesale price pass-through offer</u> As set out in the response to question 7b, very few customers have the interest or capability to manage wholesale market risk by taking on a spot price pass-through offer. Retail customers who sign up to such offers are therefore likely to be highly engaged consumers. Several retailers already offer spot price pass-through contracts, and customers are free to sign up to them. Given the low barriers to retail switching in the NEM, particularly for highly engaged consumers, Enel X sees no benefit in requiring all retailers to offer such contracts.
24B	Do stakeholders consider these options to be preferable to a wholesale demand response register?	Neither of these options addresses the fundamental cause of a lack of wholesale demand response in the NEM. Under the first, retailers still have the ability to control a DRA's ability to facilitate wholesale demand response, and there is very little evidence to suggest that the second option will facilitate any more wholesale demand response than currently exists. Enel X does not believe that the AEC proposal, standard offers or mandatory pass-through offers would support the development of a workably competitive market for the provision of wholesale demand response.
24C	Do stakeholders consider these options to be complementary to a wholesale demand response register?	See above.
Appendix D – Load shedding compensation mechanism		
Question 25: Issues addressed by a LSCM		
25A	Do stakeholders agree that reliability related load shedding inefficiently allocates risks to end consumers?	It is unclear how this proposal aligns with the principles that underpin the reliability standard. The reliability standard allows for some load shedding because the costs of guaranteeing 100 per cent reliability are extremely high. A LSCM appears to be an attempt to fill in the 0.002 gap and support higher levels of reliability than that

	Does the proposed LSCM address this issue?	which is incentivised under the current reliability standard and settings. Compensation to customers that are involuntarily curtailed will be paid for by all customers. If the intention is to incentivise higher levels of reliability, it may be more appropriate to amend the reliability standard and settings rather than developing and implementing an additional mechanism.
25B	Would an LSCM facilitate greater levels of wholesale demand response?	Potentially, but without addressing the fundamental barriers to demand response participation in the NEM, it is likely to only incentivise greater levels of peaking generation capacity.
Question 26: Benefits and issues associated with a LSCM		
26A	Do stakeholders agree with the outline of the benefits and challenges associated with the introduction of an LSCM?	Enel X does not consider that this mechanism will in itself facilitate greater levels of wholesale demand response. It appears that its intention is to facilitate higher levels of reliability. If that is the case, it may be more appropriate for the AEMC and the Reliability Panel to consider the question of whether the NEM needs higher levels of reliability through a separate regulatory process. This question is largely being addressed through the *Enhanced RERT* rule change request.
26B	What other issues would need to be considered?	See above.