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Energy Competition Task Force
Electricity Authority

Submitted via email: taskforce@ea.govt.nz

3 July 2025

Dear Task Force team

RE: Rewarding Industrial Demand Flexibility – Issues and options paper

Thank you for the opportunity to provide feedback to the Energy Authority (Authority) on the *Rewarding industrial demand flexibility – issues and options paper*.

Enel X works with commercial and industrial energy users to develop demand-side flexibility and offer it into wholesale capacity, energy and ancillary services markets worldwide, as well as to network businesses. Enel X has been offering customer load into the Instantaneous Reserve (IR) market in New Zealand since 2009. Enel X also work with commercial and industrial energy users to aggregate responses for out-of-market emergency support mechanisms such as the Reliability and Emergency Reserve Trader (RERT) mechanism in the Australian National Electricity Market (NEM).

Enel X is deeply committed to promoting a vibrant market for demand response (DR) and have invested considerable resources in building a portfolio of capabilities to support reliability and security in energy markets globally.

Emergency Reserve Scheme

Enel X endorses the Authority's proposal to develop an Emergency Reserve Scheme (ERS) to protect New Zealanders from uneconomic load shedding during periods of peak electricity demand. Supply adequacy risks from low residual generation events triggered by deteriorating reliability of aging generation fossil fuelled generation is not a risk unique to New Zealand. Comparable markets such as the Australian NEM have robust out of market mechanisms (e.g. RERT) that provide market/power system operators tools to improve resiliency when faced with unexpected threats to power system reliability. The transition to a lower reliance on fossil fuelled generation and expansion of storage technologies can be accelerated without significant risks of involuntary load shedding with an ERS in place.

Enel X agree ERS should be a last resort mechanism, to be used infrequently. Many features of NEM RERT mechanism may be adopted for the ERS including focus on 'out-of-market' resources and technology agnostic procurement.

Enel X look forward to the Authority's dedicated consultation paper on proposals to develop an ERS.

Developing a standardised demand flexibility hedging product

Enel X welcome the proposal to develop standardised demand flexibility hedging products but remain wary that barriers to independent aggregator origination will stifle product uptake. Demand response aggregators with the capability to orchestrate flexible demand resources and originate flexible hedging products are excluded from the New Zealand market.

Until the Authority can make progress reducing barriers to participation (Action 6) the growth of new hedge products will be reliant on incumbent Retailers/Gentailers diverting internal resources from their core business activities. Acquiring the technology stack and specialist skills to activate and orchestrate flexible demand resources with the confidence to back hedge contract origination is a time consuming and costly activity.

Enel X have confidence in the Authority's ability to draw on input from a broad range of stakeholders through its various industry panels and stakeholder working groups. Enel X New Zealand and regional staff are committed to sharing our global perspective on developing a vibrant market for demand response. Michael Jefferson, Enel X, Head of Development and Innovation as member of the Standardised Flexibility Product Co-Design Group brought the support and insight of our global business to enhancing the New Zealand market. Enel X believe Michael would make an excellent member of any proposed Co-Design Group to develop a Standardised Demand Flexibility Hedging product.

Potential for industrial demand flexible – 'Size of the prize'

Enel X acknowledge the work done by the Authority to understand the depth and characteristics of New Zealand DR resources, but in our view the Authority's estimates are overly conservative and not reflective of current and emerging flexible demand resource influences.

Based on our participation in New Zealand IR and applying our experience from other markets we have a high confidence that with the support of specialist aggregators at least 300MW of flexible industrial and commercial demand can be activated with moderate incentives and up to 600MW with higher incentive levels.

After reviewing the Sense Partners report we note that the report reasonably identifies the challenges of activating demand response but demonstrates an abundance of caution in assessing the scale of the flexible demand market. Enel X expect to outperform the uptake rates assumed by Sense Partners. In our experience, the awareness of demand response in the Australian market has evolved significantly since the publication of the ClimateWorks 2013 report used to inform Sense Partners conclusions.

In the Australian commercial and industrial sector, rising energy (gas/electricity) costs, greater focus on sustainability, the renewable energy transition, dramatic reductions in the cost of behind the meter batteries, and electrification trends have elevated the profile of energy use management and demand side flexibly within business decision making. Enel X have observed similar evolution in New Zealand businesses.

In our experience specialist flexible demand aggregators (such as Enel X) are adept at efficiently bringing specialist technology and knowhow, gaining the attention of and working with energy managers, and quantifying the likely business impact of activating flexible demand resources.

Exploring Code or other changes to enable third-party providers

Enel X welcome further consideration of options to enable third-party providers to directly, without an intermediary Retailer/Gentailer, participate 'in-market' and receive market reflective revenues from flexible demand activities. Such a mechanism will add further diversity to hedge markets and enhance market price discovery by decoupling end-user's appetite for flexible demand participation from Retailer/Gentailer portfolio optimisation strategies that may see 'economic withholding' of DR capacity when 'transient market power' exists to push market prices higher. The popularity of demand-side aggregators over Retailers in other jurisdictions is largely related to less risk of 'split-incentive' problems.

Further consultation responses

Enel X has attached Appendix 1 including responses to:

- What are the barriers to more industrial demand flexibility;
- Vision for industrial demand flexibility; and
- Proposed roadmap for industrial demand flexibility.

We would be happy to discuss any of these issues further with the Authority. If you have any questions or would like to discuss this submission further, please do not hesitate to contact me.

Kind Regards,

Alister Alford
Senior Manager, Market Development and Regulatory Affairs, Australia & New Zealand
[redacted]

Appendix 1 – Issues and options paper responses

What are the barriers to more industrial demand flexibility?

1. Do you agree with our approach of focusing on industrial demand flexibility as an early initiative to enable demand flexibility more broadly? Why/Why not? Do you have any information to indicate that demand flexibility from other consumer types may be more readily accessed?

As an early initiative, focusing on industrial demand flexibility is a less costly and lower risk option compared to engaging across a broader Consumer Energy Resource (CER) base. However, Enel X typically champion customer agnostic solutions so flexible demand resources can accurately reflect a broad base of 'explicit' consumer responses to price. Enel X encourage the Authority to accelerate its learning from the commercial and industrial (C&I) sector to support a more wholistic integration of flexible demand resources. Enel X is deeply committed to promoting a vibrant market for demand response across all flexible demand resources.

The ability of a demand response scheme to adapt to expanded eligibility is largely a matter of 'principle based' verses 'prescriptive' policy design wherein a principle-based framework better facilitates a market operator's ability to adapt to emerging opportunities.

In Australia, Consumer Energy Resources (CER) such as residential batteries are expected to make significant future contribution to flexible demand resources and various entities have advocated for the inclusion of CER demand response in NEM market mechanisms. In the NEM commercial and industrial resources currently make up the bulk of actively orchestrated demand response. Residential hot water heating control is generally not flexed in response to short term spot prices but 'shaped' to form portfolios to match typical solar PV output hours or low usage overnight periods. Enel X recommend the Authority include the NEM in 'market scans' as an indicator of emerging CER orchestration trends that could rapidly to shape in the New Zealand market.

2. Do you agree with our estimates of the potential industrial demand flexibility capacity available in New Zealand currently and into the future? Why/why not? Do you have any evidence to support a materially different estimate?

Enel X do not agree with the Authority's estimates of the current potential demand flexibility available in New Zealand. Based on our New Zealand portfolio and engagement with C&I customers Enel X estimate a highly confident flexible demand resource base of at least 300MW with moderate incentives and support from third-party aggregators.

Enel X acknowledges the work done by the Authority to understand the depth and characteristics of potential DR resources. In our experience specialist flexible demand aggregators have the most

informed understanding of the scale of potential resources, potential duration of responses, and the fixed and variable cost hurdles to activate those resources.

Enel X understand the conservative approach utilised by the Authority; however we believe that many of the underlying assumptions do not reflect current trends observed in other jurisdictions such as the NEM which are likely emerging in a New Zealand context, particularly trends in business electrification activities.

After reviewing the Sense Partners report we note that the report reasonably identifies the challenges of activating demand response but demonstrates an abundance of caution in assessing the scale of the flexible demand market. Enel X expect to outperform the uptake rates assumed by Sense Partners. In our experience, the awareness of demand response in the Australian market has evolved significantly since the publication of the ClimateWorks 2013 report used to inform Sense Partners conclusions.

In the Australian commercial and industrial sector rising energy (gas/electricity) costs, greater focus on sustainability, the renewable energy transition, dramatic reductions in the cost of behind the meter batteries, and electrification trends have elevated the profile of energy use management and demand side flexibly within business decision making. Enel X have observed similar evolution in New Zealand businesses.

Applying our experience from other markets we have a high confidence that in New Zealand at least 300MW of DR can be activated with moderate incentives and up to 600MW with higher incentive levels.

3. Do you agree with our focus on intra-day demand flexibility for this initiative? Why/why not? What other approach would you suggest?

Enel X agree that intra-day demand flexibility is an appropriate starting point that aligns with the more common flexible C&I demand resource capabilities constrained by limited daily/yearly cumulative activation durations (for example, 2 to 3 hour duration DR events up to 10 times a year).

As the Authority advances work on rewarding industrial demand flexibility, Enel X encourage the Authority to continue to monitor the emergence of higher frequency and inter-day DR capabilities given falling behind the meter Battery Energy Storage Systems (BESS) costs and business electrification trends that may rapidly expand end-user flexibility in the New Zealand market.

4. Are there any other ways that currently enable industrial demand flexibility in New Zealand?

Enel X have no further comments at this time.

5. Do you agree with our description of the barriers affecting the provision of industrial demand flexibility? Why/why not? Are any other barriers relevant to the provision of demand flexibility from other consumer types?

The barriers identified by the Authority do not adequately speak to the limitations of C&I demand response solely constrained to Retailer/Gentailer commercialisation and orchestration. In jurisdictions where third-party aggregators are active market participants, the uptake of C&I demand response is much higher. Demand response aggregators bring specialist technologies and know-how to activate flexible demand resources. Third-party aggregators structure revenue agreements for end-users that are less likely to suffer from 'split incentive' scenarios.

Enel X welcome further consideration of options to enable third-party providers to directly (that is, without a Retailer/Gentailer) participate 'in-market' and receive market reflective revenues. Such a mechanism should seek to add further diversity to hedge markets by looking beyond Retailer/Gentailer portfolio risk management limitations to deliver DR at prices reflecting the end-user's appetite for participation.

Enel X notes that vertically integrated 'Gentailers' overall portfolio revenue position may benefit from 'economic withholding' of DR capacity even if the end-user marginal cost thresholds have been cleared. The popularity of demand-side aggregators over Retailers/Gentailers in other jurisdictions is largely related to less risk of 'split-incentive' problems.

6. Do you agree that existing incentives and contracts for demand flexibility are resulting in inefficiently low levels of demand flexibility?

The utilisation of flexible demand resources in New Zealand is lower than comparable markets that Enel X operates in. Limited access for non-Retailer/Gentailer aggregators and the absence of market models (incentive or 'negawatt' schemes) that reward DR ('missing money' problem) are contributing to inefficient low levels of demand flexibility.

Furthermore, outside of a Retailer/Gentailer hedge portfolio it is difficult to derive value from the risk management utility of reducing demand during extreme prices events that lowers the amount of expensive hedge cover that must be purchased but potentially inefficiently utilised. Generally, hedge prices include a risk premium over the 'expected/efficient' price level of the underlying commodity. Access to physical resources avoids paying this risk premium but have their own set of costs.

The ability to dispatch DR dependability is explicitly rewarded in 'capacity markets' but in energy-only markets this value it is harder to monetise for flexible demand resources. The extent that Retailer activated DR fails to reflect the economic levels that an end-user is willing to flex demand for is a direct indicator of market inefficiencies attributable to either exercise of market power or lack of systems/expertise to efficiently exercise a DR.

7. Are you aware of any additional barriers to enabling more industrial demand flexibility?

Enel X participates in many DR programs globally. Successful DR programs typically permit non-Retailer/Gentailer (i.e. third-party) aggregators to directly access market value streams and dispatch DR. The consultation paper (paragraph 5.17) highlights the potential for Retailer/Gentailer portfolio optimisation to restrict otherwise economic responses from flexible demand resources. Third-party flexible demand aggregator access to market revenues facilitates competition that can directly address 'economic withholding'/'transient market power' behaviour and expand the efficient use of flexible demand resources.

Furthermore, based on our experience in other markets the factors shown in Figure 1 provide a dependable indication of the likely success of a demand response mechanism.

In addition to the success factors in Figure 1, 'Value stacking' or 'product co-optimisation' are important drivers of successful flexible demand commercial arrangements. For example, in the Australian NEM a flexible demand resource may dynamically choose to participate in contingency frequency control or energy market/network tariff optimisation based on real time/forecast prices and opportunity costs.

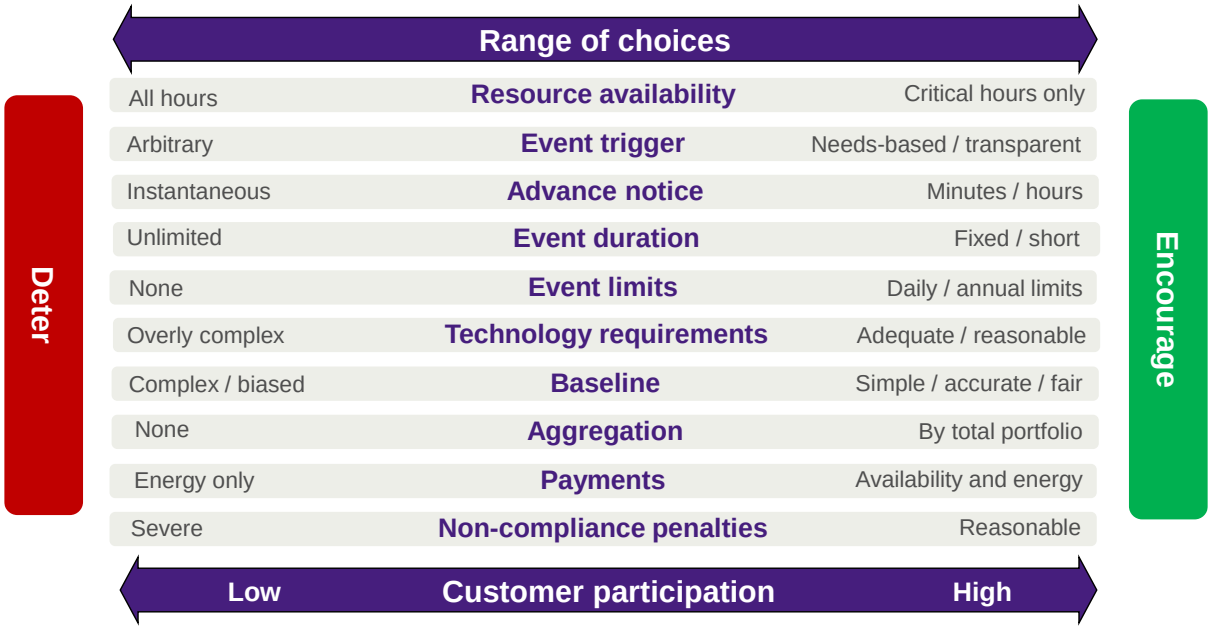

Figure 1. Demand response programme success factors

Vision for industrial demand flexibility

8. Do you agree with our vision for industrial demand flexibility? Why/why not?

Enel X is supportive of the Authority's 'Vision for industrial demand flexibility', however a stronger connection to 'delivering' rather than simply 'promoting' 'a competitive, reliable, and efficient electricity industry' would signal a clear ambition to lower end-user costs by activating efficient flexible demand resources.

9. Do you believe that this vision is applicable to other forms of demand flexibility, or to flexibility more generally?

Provided the Authority's Vision is adequate to deliver an optimal resource mix (i.e. avoids promoting specific participants/mechanisms/technologies at the expense of more efficient alternatives) then it is reasonably applicable to other forms of demand flexibility, or to flexibility in general.

10. Do you agree with our view that demand flexibility providers should be able to receive payment for providing flexibility services that exceeds avoided energy costs, provided the demand flexibility is efficient (as defined)? Why/why not?

Enel X support payments to flexibility services on the 'net benefit' to consumers principles set out in paragraphs 6.3, 6.4, 6.5, and 6.6 of the consultation paper. Enel X note that it is important to consider 'risk management' and 'dispatch process efficiency' gains in the 'net benefits' test.

In the Australian NEM a significant body of work Integrating Price Responsive-Resources into the NEM (IPRR)[1] is underway to facilitate greater participation of flexible resources in the dispatch process to reduce 'dead-weight losses' in the dispatch process price setting mechanism and improve power system security/reliability. IPRR includes an incentive mechanism based on sharing the expected reduction in market operation costs with flexible resources participating in dispatch.

11. Do you believe that a different level of payment would be appropriate than what we have defined as efficient? Why/why not?

Enel X recommend the Authority firstly ensure that the potential end-user cost benefits from the efficient use of flexible demand are fully recognised including the reduction in the cost of risk management. If the cost benefits are not likely to be realised due to market entry barriers

[1] Australian Energy Market Commission, Integrating price-responsive resources into the NEM Rule change, https://www.aemc.gov.au/rule-changes/integrating-price-responsive-resources-nem

(technology/systems/end-user confidence etc.) then an application of time/value limited subsidies may reasonably be considered.

Proposed roadmap for industrial demand flexibility

12. Do you agree with our proposed guiding principles? Why/why not? Are other specific considerations which you believe should be included in the evaluation framework?

Enel X support a principles-based approach guiding an industrial flexibility roadmap as this approach is adaptable to rapid evolution in industrial flexible demand capabilities. From this perspective, the Authority's proposed guiding principles for industrial demand flexibility roadmap actions form a sound basis for ongoing development. Furthermore, the principles support products incorporating the success factors identified in our response to Question 7 (Figure 1.).

Globally, the rate of innovation in the flexible demand resource sector is accelerating, driven by the combined effects of the transition to renewable energy resources, falling costs of behind-the-meter solar PV and battery energy storage, industrial and commercial electrification to reduce exposure to fossil fuel cost volatility, and the deployment of intelligent devices and energy optimisation tools. A sound principles-based framework is more likely to be adaptable to innovation and avoid the scenario where a prescriptive framework is unable to adapt to emerging technologies.

13. Do you agree with our view that there is currently insufficient potential industrial demand flexibility to justify the establishment of new market mechanisms or platforms other than the proposed ERS and standardised demand flexibility product?

As noted in our response to Question 2, based on Enel X's experience the Authority's expectations of potential industrial demand flexibility are overly conservative and based on outdated assumptions/observations. Enel X recommend the Authority remain open to establishing new market mechanisms or platforms, specifically to increase participation of non-Retailer/Gentailer participants.

Enel X recommend prioritising work to explore Code or other changes to enable third-party providers to participate in the provision of industrial demand flexibility across all market and contractual mechanisms (including hedging) (Action 6). Enel X expect this work will improve the Authority's understanding of the potential for new market mechanisms.

14. Do you consider there are other cost-effective measures that can be implemented urgently to enable industrial demand flexibility to support reliability and efficient in the wholesale market?

Enel X recommend establishing ERS urgently and use industry interest in participation as a guide for the potential uptake of a mechanism that responds to market price signals rather than

'emergency supply scarcity'. A pilot mechanism operating for a limited number of periods per year that returns to flexible demand participants a portion of the expected overall reduction in end-user costs would confirm end-user appetite for a more integrated mechanism. An introductory scheme should aim to transition to a 'in-market' mechanism to minimise market distortions.

To encourage participation, Enel X recommend the Authority note the success factors diagram in our response to Question 7 (Figure 1). A demand-side program (DSP) focused on a limited number of DSP dispatch hours in critical periods with clear activation objectives, >4hrs notice, and linked to forecastable periods of market stress would provide a strong basis for engaging with industrial and commercial loads. To implement a DSP quickly Enel X recommend utilising a baseline mechanism that supports predictability of load assessment and settlement at an aggregated portfolio level including participation by third-party aggregators.

15. Do you agree with our proposal to establish an ERS? Why/why not?

Enel X endorses the Authority's proposal to develop an Emergency Reserve Scheme (ERS) to address supply adequacy risks from low residual generation events. Economic load shedding from flexible industrial demand will minimise the likelihood and extent of uneconomic load shedding during periods of peak electricity demand.

The transition to a lower reliance on fossil fuelled generation and expansion of storage technologies can be accelerated without significant risks of involuntary load shedding with a ERS in place. An ERS is also useful for addressing unexpected reliability impacts from aging generation or network assets.

Enel X agree the scheme should be a last resort mechanism, to be used infrequently. Many features of NEM RERT mechanism may be adopted for the ERS including a focus on 'out-of-market' resources and technology agnostic procurement.

Enel X look forward to the Authority's dedicated consultation paper on proposals to develop an ERS.

16. For demand flexibility providers – do you consider it likely that you could make demand flexibility capacity available for an ERS in time for Winter 2026?

Enel X is confident that demand flexibility capacity can be made available for ERS in time for Winter 2026. In the Australian NEM Interim Reliability Reserve (IRR) mechanism Enel X has been able to recruit flexible loads with 3-month lead times, albeit in a market with experience in demand-side programmes. If the Authority can establish ERS before the end of 2025 there's a reasonable prospect of delivering flexible demand capacity for the winter 2026 demand peaks.

Based on our IRR and RERT experience Enel X believe the following features will support recruitment of loads to a nascent mechanism in a compressed timeframe:

- An availability payment element to offset establishment costs
- Direct metered and baseline options
- Limited daily operating window and cumulative dispatch hours
- Dispatch linked to observable market conditions
- >2hr minimum dispatch duration

- Compliance/settlement measured across a portfolio of resources
- Reasonable performance penalties that can be managed by the aggregator

17. Do you agree with our proposal to investigate a standardised demand flexibility product? Why/why not?

Enel X welcome the proposal to develop standardised demand flexibility hedging products but remain wary that the absence of support for non-retailer aggregators in the Code leaves a capability gap that will impact liquidity as Retailers/Gentailers typically do not have the deep skill set necessary to back hedge instruments with demand response assets.

Enel X is deeply committed to promoting a vibrant market for demand response that enhances market participation and competition. We recognise the import role of DR contributing to efficient risk transfer and risk transformation in energy markets.

18. Do you support our other proposed roadmap actions? Why/why not?

Enel X welcome further consideration of options to enable third-party providers to directly (that is, without a Retailer) participate 'in-market' (Action 6). As advocates for demand flexibility, we applaud the Authority's progress in recognising the important role that DR plays in efficient energy markets, however we believe there is scope for the Authority to be more ambitious in its proposed roadmap. Following review of industry consultation feedback Enel X encourage the Authority to place greater emphasis on the timely development of new mechanisms rather than exploring or monitoring opportunities.

Market mechanisms that facilitate demand-side participation by aggregators brings focused end-user engagement support, specialist technology, bespoke orchestration tools, and market deployment expertise that would otherwise be too expensive or too risky to develop within tradition electricity retail businesses. End-users are more likely to engage in demand response where there is greater confidence that programme objectives clearly align the incentives of the end-user and aggregator. Portfolio optimisation in Retailer/Gentailer lead demand response programmes risks underutilising DR and diluting end-user expression of flexible demand dispatch costs.

19. Do you believe there are other actions that we should consider in the roadmap? If so, please outline the actions and rationale.

Enel X encourage the Authority to 'lean into' developing a greater understanding of how to 'meet end-users where they are' to facilitate greater uptake of DR opportunities. Pilots and trials play a role but can lack commercialisation focus.

Initial observations from the review of the Australian NEM market settings (NEM Review) which seeks to promote investment in firmed, renewable generation and storage capacity in the later part of this decade has drawn attention to a flexible resources participation gap that is impacting market

efficiency, see Enel X annotations in blue to slide from the NEM Review preliminary findings and directions presentation[2] (Figure 2).

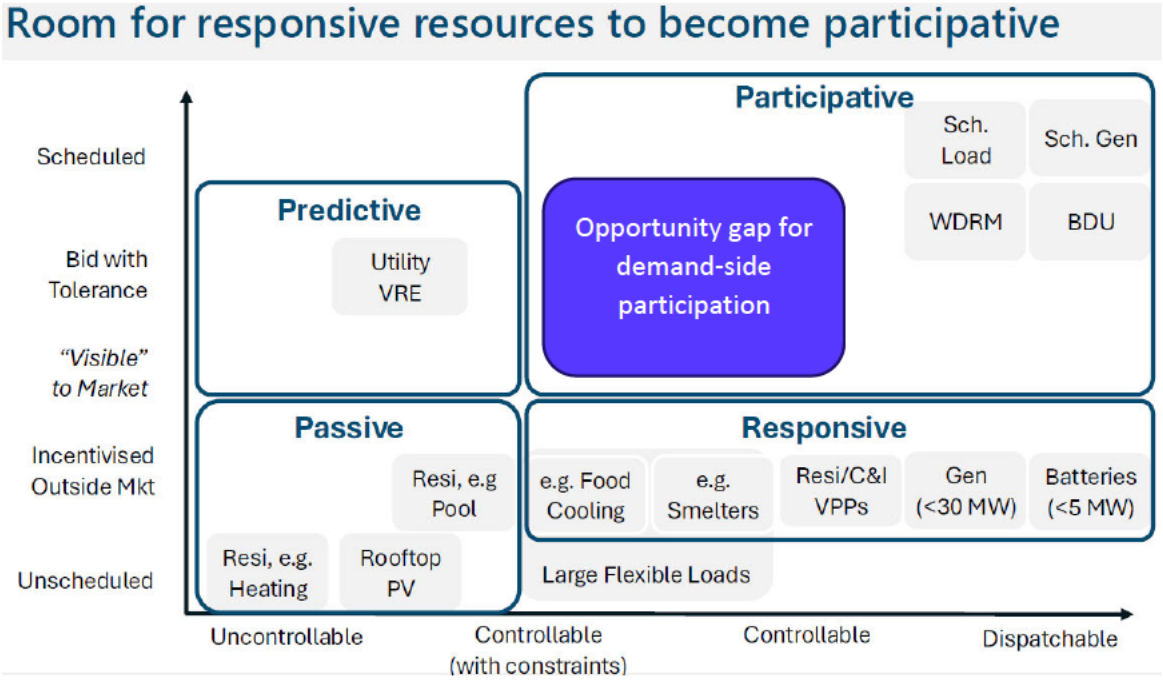

Figure 2. NEM Review: Findings and directions – demand-side opportunity gap

Figure 2 not only highlights the diversity of potential flexible resources (i.e. spread only the x-axis) but also the opportunity to examine market settings that are more conducive to encouraging 'in-market' demand-side participation. Market dispatch performance/integrity (reduction in 'dead-weight losses') can be improved by integration of 'explicit' demand-side response through 'visibility' or 'bidding with tolerance' mechanisms.

Enel X encourage the Authority to consider actions in the roadmap that explore how to elevate engagement within the current capabilities of demand-side resources.

20. Do you support the proposed sequence and timing of actions in our proposed roadmap? Why/why not?

Enel X recommend that the Authority commence work on Actions 6 & 7 promptly. These actions have low dependency on other parts of the proposed roadmap and will deliver further options to expand resource flexibility in the market.

[2] NEM Review: Findings and directions, pg 42. https://www.dcceew.gov.au/energy/markets/nem-wms-review

21. Is there anything else relevant to this issue that the Authority should consider? If so, please provide any relevant information to support the Authority's consideration.

Enel X have no further comments at this time.