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Electricity Authority
Wellington

Via email: **taskforce@ea.govt.nz**

Submission on Rewarding industrial demand flexibility – issues and options paper 28 May 2025

Thank you for the opportunity to comment on this paper – this is an important piece of work for the future of New Zealand's energy system. Energy systems and economic development / growth are inextricably linked. To achieve the latter, New Zealand needs to become more sophisticated in how it sets up its energy system and this demand flexibility work by the Authority is a step in the right direction. NZ Steel commends the collaborative process being led by the Authority, which takes into account the perspectives and experiences of the sector.

This submission begins with general comment on the issues and options paper, and then sets out NZ Steel's responses to the specific questions the Authority has asked in the paper.

NZ Steel is available to discuss further with the Authority the views put forward in this submission, should that be useful or necessary.

General comment

NZ Steel agrees that industrial demand response is an underutilised mechanism for assisting with managing peak demand in New Zealand.

The issues and options paper correctly recognises there are technical and operational challenges, as well as direct and indirect costs, faced by businesses that provide demand response. Without adequate incentives, the challenges and costs can outweigh any benefit of being involved in a demand-flex scheme.

NZ Steel has the ability to vary load to manage within a potential demand response set of criteria. The opportunity at NZ Steel's Glenbrook steelworks is meaningful due to both the scale and the speed of response. The operations allow for a comparatively rapid demand response, with the ability to provide up to 70MW within the hour when given an appropriate notice period.

However, any demand response imposes costs and risks on NZ Steel, particularly in wear and tear on equipment, fixed cost idle time, and overwhelmingly in reduced production capacity. For any scheme or arrangement to be viable for NZ Steel, there must be sufficient compensation mechanisms in place to balance out the costs and risks incurred by the business.

NZ Steel's parent company BlueScope currently provides this type of industrial demand response at its North Star electric arc furnace steelworks located in Delta, Ohio. It is primarily called upon for peak load management and allows for a large proportion of the site load to be made available with a four hour notice period. Occurrences are rare but the arrangement involves an annual availability payment made in consideration, regardless of whether load is called upon.

It is important to recognise the current incentives/schemes in New Zealand are inadequate to encourage willing participation:

1. Spot Price: the spot price signal was previously promoted as the only signal required to incentivise demand response at times of constraint. NZ Steel agrees with the Authority's conclusion in the paper that this has not proven to be the case.
2. Dispatchable Demand: NZ Steel has not seen how dispatchable demand can work for its operations. Lack of uptake by others also indicates this product is not fit for purpose.
3. Interruptible load (IL) offered into the Reservices Market is an important last line of defence. How this and AUFLS fit with demand-flex are important considerations.

NZ Steel is among the few large industrials in New Zealand that can offer meaningful demand response. Each large industrial has a different ability to offer a demand response and has a different value proposition.

In this context, a standardised approach may not be sensible when it comes to large industrials. Rather, the better approach is perhaps to design demand response packages for interested parties on a case by case basis. The tailored package can suit the given industrial's load requirements and also be designed to suit the demand response requirements of the Grid. NZ Steel believes this tailored case by case approach would be the most efficient pathway to achieving a timely outcome.

For smaller to medium sized industrials/consumers with more standardised loads, a more standardised opt in/out approach is recommended.

NZ Steel's responses to the specific questions

Q1. 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?

We agree industrial demand flexibility should be a target area because of the potential scale. Whether it will be low-hanging fruit, as suggested in the paper[1], will depend on technical[2] and operational constraints, as will consumer willingness[3]. The latter being driven by assured incentives to off-set the direct and indirect costs of offering and providing demand response.

Q2. 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?

NZ Steel's operations have short-term flex potential that could make a material contribution to the totals shown in Figure 1[4]. Whether operational constraints and incentives will be sufficient to off-set the direct and indirect costs of having available and activating demand response is the key unanswered question.

Q3. Do you agree with our focus on intra-day demand flexibility for this initiative? Why/why not? What other approach would you suggest?

[1] Para 6.11, page 32.
[2] Para 4.24, page 21
[3] Para 4.21, page 21
[4] Page 22

Intra-day targets demand response that would likely not be available for medium- or longer-term response. It is appropriate that has the focus proposed.

Q4. Are there any other ways that currently enable industrial demand flexibility in New Zealand?

The paper captures these[5]. The most significant previously in use, which was removed from the TPM two years ago, was RCPD[6]. That provided an on-going strong price signal that incentivised load reduction at time of system peak in specified areas of the country. The incentive manifested in lower transmission charges for the following year. It had a positive impact for the SO balancing demand and supply, and also a market impact because of the lower load. Importantly the RCPD signal provided a long-term signal reducing the need for transmission and distribution system upgrades. Studies[7] have shown peak demands increasing at a higher rate than energy since it was decided by the Authority that there would be no demand price signal in the TPM.

Q5. 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?

Para 5.4 summarises the current situation "…potential savings from demand response have been modest and may not be enough to incentivise significant volumes of industrial demand flexibility."

We agree energy price risk management will have a muting impact[8]. The complexities and idiosyncrasies of the market, and strong, but misplaced[9] 'encouragement' from the Authority to 'hedge', encourages disengagement by consumers and/or set-and-forget financial instruments. The challenge is then encouraging consumers to look at the price arbitrage opportunities of demand-flex.

Q6. Do you agree that existing incentives and contracts for demand flexibility are resulting in inefficiently low levels of demand flexibility?

We agree there are few and generally only weak incentives for demand flex and these are off-set by the direct and indirect costs of participating – our opening comments outline this in more detail. Contracts for demand-flex are not readily available and involve in-depth discussions as to whether there may be common ground for a bilateral agreement. Of itself, this process will limit the number of likely participants.

The 'first mover' problem[10] is the final nail-in-the-coffin as to a disincentive to being involved.

Q7. Are you aware of any additional barriers to enabling more industrial demand flexibility?

Point one – short-term focus

The major issue is the mechanisms outlined in the options paper inherently have a shorter-term focus rather than for the longer term.

- Action 1 is about an Emergency Reserve Scheme (ERS).

[5] Para 4.33 – 4.37, page 24.
[6] Para 3.2, page 15.
[7] Confluence of factors threatening electricity reliability - Sapere , paras 2.3 & 2.4
[8] Para 5.5, page 26
[9] MEUG-Hedging-Document-Large-User-perspective_May-2025.pdf, NZS submission on stress test
[10] Paras 5.6-5.9, page 26

- Action 2 relates to a Standard demand flexibility hedging contract product. Of itself this infers a monthly/quarterly or at best 2-3 year product.

The reality is electricity is a long-term industry with investment measured in decades.

Large investment requires a high degree of certainty, both on the supply side and demand side. Products (as per Actions 1&2) that may offer incentives in the short-term will lack the certainty for investment. This is investment in peak generation or storage, and investment in demand side plant flexibility (e.g. overs-sized plant to enable flex in production schedules).

Ironically, if the incentives are appropriate to smooth demand for the long-term then there will be reduced incidences when short-term measures will be called upon reducing the incentive to be ready to be called upon (unless there is a 'retainer' paid).

Without mechanisms to flatten the demand curve, we are destined for unnecessary investment in transmission and distribution assets, and challenges of ensuring sufficient energy at peak.

What is required are incentives to encourage long-term planning across the industry.

If the Authority is to proceed to the next stage of industrial demand flexibility it is essential an indication of likely financial incentive is known at an early date. Para 4.25 shows a Sense partner value of "…20% to 30% of the industrial's electricity cost".[11]

The detail for a System Operator initiated response includes indications being provided re expected: frequency of calls, duration for response, intervals between calls, notice period.

Point two – IL/AUFLS

A further limitation and restraint to demand-flex may involve the current Interruptible load (IL) bids to the Reserves Market. Also, requirements relating to AUFLS. AUFLS current requirements restricts potential IL. We consider this to be an unnecessary restriction, in that in an AUFLS event the IL will invariably have tripped anyway. For short-notice 'calls' that may be envisaged under Actions 1 & 2 this may also impact IL offerings to the reserves market.

Demand flex capability will invariably require investment. It is essential AUFLS provisions are synchronised with demand flex and cannot be changed, effectively cancelling the value of the demand flex investment.

Q8. Do you agree with our vision for industrial demand flexibility? Why/why not?

The vision as presented is too high-level to be of value for the outcomes the paper is seeking to achieve. The vision needs to relate to specifics that will optimise the use of existing assets versus further investment.

Q9. Do you believe that this vision is applicable to other forms of demand flexibility, or to flexibility more generally?

No. Refer to response to Q8.

[11] Para 4.25

Q10. 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?

Yes. Without recompense for the costs and risks taken on, demand response will not get uptake. There is simply no commercial reason to choose to disrupt operation performance otherwise.

Note also that an efficient working demand response regime would be expected to defray/remove the necessity for peaking capacity, which is operated on a standby, low run-time, very high cost model basis.

One of the objectives of the paper is that spot pricing is inadequate to manage load[12], yet the paper still restricts thinking to this aspect. This approach is also captured in comments by the Commerce Commission Chair Dr John Small: "I am somewhat sceptical that we're going to be able to use market mechanisms to completely solve this problem." Instead, "it may well end up in some kind of publicly arranged scheme to provide extra capacity"[13].

Q11. Do you believe that a different level of payment would be appropriate than what we have defined as efficient? Why/why no

Thinking needs to move to the long-term (as per response to Q7). This may result in payment levels that may not be considered efficient in the short-term.

Q12. 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?

Questions 12-21 were not included in the initial issues and options paper and did not come to our attention until the stage of finalising this submission. Given the importance of the guiding principles to proposed work, we request further time to respond.

Q13. 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?

No. The paper goes to lengths to outline the part industrial demand flex can play in flattening the load curve. We agree with this. However, the options put forward focus on the short term. Please refer to our response to Q7 where we emphasise the importance of long-term signals. These need to be developed now.

Q14. 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?

The key enabler of demand response is sufficient recompense for the costs and risks incurred.

Q15. Do you agree with our proposal to establish an ERS? Why/why not?

Yes, this initiative is a way to leverage the possibilities available in a short timeframe.

Q16. 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?

[12] Para 1.3, page 8 and para 2.14, para 12

[13] PressReader.com - Digital Newspaper & Magazine Subscriptions, Wairarapa Time-Age 31 May 2025.

Yes, if the terms and incentives are sufficient to offset direct and indirect costs.

Q17. Do you agree with our proposal to investigate a standardised demand flexibility product? Why/why not?

Tentative support. As outlined above, given the small number of large industrials in New Zealand that may be able to offer meaningful demand response, it is possible that the best approach would be to design demand response packages for interested parties that suit their load requirements (particularly given that most of the industrials would have load requirements well beyond the Monday to Friday, 9 to 5 working hours) where it likewise could be tailored to suit the demand response requirements of the Grid. This would be the most efficient pathway to achieve the best possible outcome. For smaller to medium sized industrials/consumers with more standardised loads, a more standardised opt in/out approach would be recommended.

Q18. Do you support our other proposed roadmap actions? Why/why not?

Questions 12-21 were not included in the initial issues and options paper and did not come to our attention until the stage of finalising this submission. We request further time to respond.

An initial response relates to action 7[14], Demand response-ready connections, warrants more timely action. Given the focus on electrification with new and replacement equipment, it is important 'incentives' are in place now for the planning and design stages.

Q19. Do you believe there are other actions that we should consider in the roadmap? If so, please outline the actions and rationale

Mechanisms that focus on long-term pricing signals as outlined above and implementing these in a shorter time-frame than the five-year road map.

Q20. Do you support the proposed sequence and timing of actions in our proposed roadmap? Why/why not?

Refer responses to Q18 and Q19.

Q21. 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.

New Zealand Steel looks forward to contributing further on this important topic. Specifically, NZ Steel is available to provide further details on the North Star (Delta, Ohio) case study. While it is not an exact like-for-like setting to New Zealand, this international example of large scale industrial demand response could provide valuable lessons to inform the Authority's work.

New Zealand Steel

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[14] Appendix B, page 47.