



11 April 2024

The Electricity Authority
Wellington.

Re: **Submission on the future operation of New Zealand's power system.**

1. Thank you for the initiative taken to commence a broader conversation on this topic and for the opportunity to comment on this paper.
2. In summary we consider the paper has undue focus on technical aspects of future operation of the power system and this is at the expense of Commercial and Consumer perspectives. Short of mandated requirements, it is the commercial realities (including operation of the Wholesale Market) and involvement of individual consumers that will largely determine the outcomes.
3. We recognise the challenge the Authority faces in looking at the operation of the power system, without the context of a New Zealand Energy Strategy. However, we do not consider future power system operation can be scoped without full consideration of the dynamic interfaces that make up the electricity industry as a whole, and arguably the broader energy landscape.
4. A number of areas in the paper outline the importance of demand side participation in managing the power system and minimising new investment. Flattening the demand curve is a key to cost effective operation of the system. Yet over the years effective mechanisms have been removed. Our submission outlines the minimalisation of peak control mechanisms that had been in place over the years, culminating in withdrawal of the Transpower RCPD price signal. New technology is giving rise to new tools, but commercialisation of these and consumer acceptance and roll-out will involve an extended gestation period.

More detail is included below in our response to specific questions.

Q1. Do you consider section 3 to be an accurate summary of the existing arrangements for power system operation in New Zealand? Please give reasons if you do not agree.

5. No. We consider the technical focus of this paper largely misses the consumer perspective and other important elements have been omitted.
6. What has been captured has been done well and will be useful for wider reference.

7. The “existing arrangements” and the “...power system operation...” are much wider than the technical focus of this consultation paper. It is the interaction with the **Consumer** that is the ultimate test for the power system. The current Industry structure (that has been in existence now for 25 years), the Participants, the Market, and the regulatory environment, are all critical parts to what makes up the electricity industry in NZ. Future operation of the Power System in NZ cannot be adequately considered without taking all these factors into account and the **dynamic interaction with consumers**.
8. From a **technical perspective** the aspects brought considered by the Authority need to be expanded.
 - i. A clear distinction is required between the requirements and challenges of **demand** and **energy**. There are challenges in meeting both, but different strategies are called for. We pointed this out in our recent submission on the Transpower SOROP paper¹.
 - ii. Flattening the curve is the key to maximising utilisation of current assets and delaying the need for new investment. The paper fails to capture this point.
 - iii. Section 3.7 – “Power system operation has a history of evolution” - requires expansion. Peak control mechanisms that were effective in the past have largely been eroded². The final step being removal of the transmission peak demand charge with the new TPM coming into effect for winter 2022³. Before leaping headlong into complicated and expensive solutions, it is important the history and learnings from these past mechanisms be recorded for the benefit of those that have joined the industry in the last 30 years and for those who look to design the future. This will help with understanding why we see peak demand increasing at a greater rate than energy.
9. Operation of the power system is ultimately for the benefit of consumers, and the financial and social well-being derived. The interaction of all the component parts and the **impact on consumers** – direct and indirect, conscious and unconsciously - is as important as the technical structures outlined in section 3. This includes limitations with the current market and sustained high wholesale prices⁴. It is important these regulatory and commercial factors are documented and form part of the work looking at the future operation of the power system.

Q2. Do you agree that we have captured the key drivers of change in New Zealand’s power system operation? Please give reasons if you do not agree.

10. Given the technical focus of this paper, we do not consider all the key drivers have been captured.

¹ [SOROP 2024 - NZ Steel Submission .pdf \(transpower.co.nz\)](#)

² New Zealand was arguably a leader in managing peak demands. This included peak demand pricing in the wholesale price (pre Market days), and ‘ripple’ control exercised by network operators, controlling hot water cylinders and other load during peak winter periods for which consumer received a reduced charge rate. Ripple control system continue in some EDBs, but we understand with reduced reach.

³ While Transpower monthly invoicing under the new TPM commenced in April 2023, there was a known high probability that from the start of the Sept 2021 Transpower RCPD year, that coincidental peaks would no longer incur charges.

⁴ There are a number of identified issues relating to the Market that remain unresolved. These are well documented by various industry sources. These issue impact confidence in the Market and hence impact future operation of the power system.

11. We suggest two further “Drivers for Change” be added. Those being **Consumer** and **Commercial**

12. **Commercial.**

- a. The growth and changes suggested or postulated in the paper will only occur if they make commercial sense or have an assured return, be this on the supply side or demand side.
- b. Exceptions to the investor return model include the following and generally have costs and risk still borne by consumers or the wider public:
 - Government funding or underwrite
 - Regulated return, eg Transpower, EDBs
 - The few individuals/businesses who have the inclination and resources to invest early.
- c. It is incumbent on the Authority to retest many of the assumptions and projections for large growth. A number of these are mere scenarios based off a low base and core assumptions of demand uptake which we suggest are not helpful⁵. Given the cost structure and current market price projections, the Authority has a responsibility to re-test projected demand increases with a commercial reality lens.
- d. The Authority needs to relook at 4.23 and claims “...consumers are increasingly participating in the demand-side flexibility/management...”. This is a sweeping statement given increases to date form a low base.
- e. From a NZ Steel perspective, the incentives for demand side participation largely no longer exist.
- f. What remains is the WITS wholesale price projection which does moves around a lot. While RTP (real time pricing) gives a certainty at a point in time and will feed into the half-hour average, price indications leading up to and beyond the current dispatch, lack certainty. As the supply / demand balance changes there can be large variations in very short periods of time. This uncertainty, and potential short duration of a high price, does not match with the operational constraints and production economics of reducing demand on large, complex industrial plant.
- g. Removal of the RCPD pricing signal and introduction of the new TPM⁶, with inherent 348% increase in transmission charges for NZ Steel, has effectively led to an expensive fixed-price transmission cost regime. There is no incentive to reduce load at system peak times (except for ultra-high wholesale prices – invariably only when something has gone wrong in the power system).
- h. The revamped DD (dispatchable Demand) scheme has attracted few participants. For NZ Steel, and we understand other large consumers, disruption to production is just not warranted under the current DD scheme configuration.
- i. Demand-side participation requires appropriate financial recognition. Basically, this needs to be a financial return in-line with the Wholesale Market price at the time of load reduction, or an auxiliary market rewarding participation at an appropriate rate – the latter the Authority continues to dismiss as not necessary.
- j. In the meantime, the Transpower Systems Operator continues to look for mechanisms that will provide load reductions (for no recompense) at times when

⁵ For example 4.30

⁶ Charges under the new Transmission Pricing Methodology were effective from April 2023.

generation offers do not meet expected demand. Again, for winter 2024 the SO is calling on the goodwill of EDBs and industrial consumers. An industry on-line meeting on 9 April included discussion on:

With demand peaks getting higher year-on-year, meeting demand on our coldest mornings and evenings requires close coordination and collaboration across industry, based around accurate and timely information from Transpower as system operator.

Coordination is critical for making sure generators have their units warm and ready to go and that local lines companies and industrial customers are prepared to ease off controllable demand if necessary to get us through any tight electricity supply situations.

- k. For those paying top-dollar for a so-called unrestrained transmission grid, being asked to reduce load to 'help-out', is not well received and we don't believe sustainable.
- l. For these reasons NZ Steel questions how effective proposed demand-side flexibility/management initiatives will be.

13. Consumer

- m. For consumers electricity is an enabler to assist in the efficient running of their businesses, their homes, and generally enhance their lifestyles. Most have little interest in what makes it all happen so long as the lights stay on, and they consider they are being charged a fair price.
- n. The New Zealand Power System is a Market based system. The Authority needs to be clear as to whether the market approach will in fact leave as much as possible to commercial drivers OR there will be continued administrative intervention by the Authority which effectively moves us away from a market-based system. Para 5.22 of the paper raises the question but does not assist with an answer.

Q3. Do you have any feedback on our description of each key driver?

14. Para 4.32 (e). Increased uptake of non-network solutions:

- a. This is a key focus area in operating an efficient power system.
- b. Reintroduction of peak reduction incentives will be an effective tool for non-network solutions.
- c. Enhancement of the Wholesale market to 'reward' demand response is an important option. Alternatively, an auxiliary market.
- d. Peak demand pricing to the end consumers will be a good place to start. A key non-network solution is re-introduction of transmission coincidental peak demand pricing.
- e. More involved is relooking and learning from what was once a New Zealand leading demand response system. This has been gradually eroded over the past 30 years with various structural and regulatory changes. Getting consumers on board through participant-initiated involvement is likely to be slow. In fact, short of a mandating approach, which may be required for EV charging, it will likely take decades under the current multi-participant industry structure. There are learnings

that can come from the simplicity of operation and effectiveness of now diminished 'ripple' control mechanisms.

15. Para 4.47 to 4.53. Electrification of the energy system.

- a. While we agree electrification in NZ will continue to increase energy use and, unless managed well, also increase peaks, the consultation paper fails to distinguish what could be from what is likely. Statements that "...demand could be 68% higher...", and "...broadly there is consensus..." are unhelpful at best. The referenced Transpower work⁷ is now 4 years old, and the country continues to evolve from pre-Covid to new norms.
- b. The vagueness of 4.53, referencing levels of investment in the \$b, does not provide a base for future meaningful conversations never mind investment possibilities.
- c. It is necessary the Authority re-test the growth assumptions taking into account current market and pricing dynamics. Affordability issues come into play when analysing the BCG cost projections summarised in 4.49 and possible mitigating actions in 4.52. Affordability for New Zealand is put into perspective in a recent MEUG release⁸

Q4. What do you consider will be most helpful to increase coordination in system operation? Please provide reasons for your answer.

16. Para 5.5 makes sweeping assumptions re consumer and aggregator involvement. What incentive is there?

- a. While this section is likely intended for the mass-market, we bring the perspective of a large direct connect consumer. As outlined elsewhere in the paper, the current structural and regulatory framework means the only remaining incentive (other than load reduction in desperation in a stressed grid situation to avoid blackout) is the wholesale spot price. Even then, PPAs and standard financial instruments can make this a purely price arbitrage situation in that electricity as part of production costs are provided for.
- b. It for others to comment on the EDB supplied retail mass-market, but it is extremely ambitious to plan on aggregators and consumers flocking to DSM options unless there is a significant financial incentive to do so. Even now after two decades of the current industry structure, transmission, network, (and even wholesale market) price signals are not necessarily passed through to the end consumer.

17. Para 5.7 relating to Authority intervention through regulatory settings, is a key question for the Authority, and broader than the context of this paragraph. In a market-based system, how much administrative intervention is too much? This is the question asked in 5.22.

⁷ Footnote 82 of the paper.

⁸ [Energy sector upgrades unaffordable, unachievable, trade association says | RNZ News](#)

18. Para 5.12. This paragraph illustrates earlier points we have made ie the consultation paper is overly focused on the technology and inwardly focused on the industry, rather than the consumer. Short of mandating requirements, consumers will:
- choose the technology and approach that works for them OR
 - reject it OR
 - try to work around it OR
 - ignore it.
19. Changes such as those outlined may make a difference, but we suggest these will likely be on the margin for the foreseeable future. An example of success we understand is the free-hour of power bringing a block of load on late at night with EV charging, but even then that creates its own challenges in terms of system management with a block of load coming on. However, RTP and DD which were seen as important to system peak management, are yet to deliver the expected outcomes and appear unlikely to do so without further changes in design.

Q5. Looking at overseas jurisdictions, what developments in future system operation are relevant and useful for New Zealand? Please provide reasons for your answer.

Nothing to add.

Q6. Do you consider existing power system obligations are compatible with the uptake of DER and IBR-based generation? Please provide reasons for your answer.

20. Paras 5.17 to 5.29 canvas a wide range of topics without getting to the crunch of Q6.

21. Para 5.19⁹ effectively summarises much of what is needed as an outcome for future operation of the power system. As per our early comments, the paper fails to cover many of these aspects and instead focuses on the technical. The consumer perspective needs to be a focus for the next conversation round.

22. Likewise, para 5.22¹⁰ raises a key question re the Authority's role in mandating outcomes v's market enhancement. Again, we doubt the consultation paper helps advance this discussion and these points also need to be a focus for the next conversation round.

Q7. Do you consider we need an increased level of coordination of network planning, investment and operations across the New Zealand power system? Please provide reasons for your answer.

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5.19. The Authority wants to ensure consistency between electricity market settings and the technical requirements of power system operation. We also want to ensure that consumers are provided with solutions that enable choice, affordability, and reliability of electricity supply. We believe a whole-of-power-system approach to the planning and operation of New Zealand's power system is needed to unlock the full potential of consumer-side technology development.

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5.22. More generally, the Authority is interested in stakeholders' views as to whether they see the Authority's role in relation to future system operation as being to facilitate change primarily through Code amendments, or through other pro-competitive measures or policies, or both.

23. Coordinated planning is a key part of optimising investment. However, equally important is the base requirement the planning is built from. As has been outlined earlier in our submission, when the consumer is the participant group that effectively pays many of the costs (directly and indirectly), there is questionable incentive for a coordinated outcome. Those with a regulated return, such as Transpower and regulated EDBs, could in fact be incentivised to achieve higher returns by building more assets.

Q8. Do you think there are significant conflicts of interests for industry participants with concurrent roles in network ownership, network operation and network planning? Please provide reasons for your answer.

24. We will leave it to others closer to the EDB area to answer this. However, we note there are far more significant potential conflicts within the wider industry.

Q9. Do you have any further views on whether this is a good time for the Authority to assess future system operation in New Zealand, and whether there are other challenges or opportunities that we have not covered adequately in this paper? Please provide reasons for your answer

25. We have laid out differing views on various parts of the paper. However, commend the Authority for looking at future operation of the power system.

26. We request the Authority prioritise looking at what is driving peak demand increases, and again stress the importance of flattening the curve as a key component of an efficient power system. This will include appropriate financial incentives for load management at peak times.

We will be pleased of an opportunity to discuss this submission with the Authority and happy to provide whatever further explanations will be of assistance.

Regards



Alan Eyes | Energy Manager – Policy & Industry
New Zealand Steel

T +64 9 375 8393 | M +64 21 870 629

E Alan.Eyes@bluescopesteel.com | W www.nzsteel.co.nz

A 131 Mission Bush Road, Glenbrook, Private Bag 92121, Auckland 1142