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Submission on the System Operator Strategy Phase 2 - Consultation Paper

Introduction

1. Bluecurrent welcomes the opportunity to comment on the draft System Operator Strategy. We support the direction of the five strategic priorities and the recognition that system operation must evolve to reflect a more decentralised, variable and consumer led power system.
2. Bluecurrent is New Zealand's lead smart metering and data services provider. We operate metering and dynamic load control (DLC) infrastructure that supports retailers, distributors and the wider sector. This submission focuses on the demand side flexibility already present in New Zealand through hot water load control, the barriers that currently prevent that flexibility from being fully realised, and the role we believe Transpower can play in helping address those barriers.
3. We make four points in this submission:
 - First, modern DLC capable meters can provide firm, verifiable demand side flexibility today and the potential resource is substantial if the existing meter base is fully enabled.
 - Second, we endorse the feedback the System Operator has already heard from stakeholders about price signal gaps and the inconsistent valuing of flexibility and note that recent Electricity Authority work and successive independent reviews reach the same conclusion.
 - Third, credible solutions such as a Sustained Reserve are now being proposed, but there is no clear process for assessing, ranking and implementing the various options across the sector.
 - Fourth, Transpower is an important stakeholder in this area and we encourage it to take a more proactive role in assessing options to address the market barriers to flexibility.

First, modern DLC capable meters can provide firm flexibility today, with significant untapped potential

4. Hot water load control has provided demand side flexibility in New Zealand for over 50 years through ripple control. Ripple is an ageing technology that relies on blunt, one way switching. It provides the System Operator and networks with limited real time visibility of what has responded and by how much, which has historically constrained the reliability that could be ascribed to residential demand side resources.
5. Modern smart meter based DLC changes this. It provides precise, two-way control at the individual site level, with telemetry that allows response to be observed and verified in real time. This is the key shift for more efficient and effective system operation. It moves aggregated hot water control from an unobserved, coarse emergency lever to a resource with the characteristics needed to be treated as firm within planning, dispatch and reserve processes. The diversity of response across a large fleet of cylinders provides statistical reliability in aggregate, in the same way the system already relies on probabilistic assumptions in other areas of operation.
6. Bluecurrent manages approximately 1.4 million smart meters across New Zealand. Around 307,000 of these sites are already configured to support DLC of hot water cylinders. Of these, approximately

80,000 (around 25 percent) are currently enrolled in active DLC programmes and providing flexibility services to the market today. The remaining capable sites are not yet enrolled.

7. The 307,000 capable sites represent an estimated 700MW of flexible load. This figure is informed by extensive real-world trials and operational experience. It reflects a realistic view of the capacity available in practice, accounting for factors such as diversity of household water use, cylinder size and insulation, the timing and duration of control events, seasonal variation in demand, and the practical limits of shifting load without affecting service quality.
8. This means the resource can grow in two ways. In the near term, enrolling more of the sites that are already capable would increase the flexibility available to the market. Over the longer term, as meters across the wider fleet are progressively upgraded to DLC capability, the capable base itself will expand. This is a resource that is already installed, requires no new consumer hardware and is available across a wide diversity of homes including renters, which distinguishes it from solar and battery-based flexibility.

Second, we endorse the stakeholder feedback the System Operator has heard on price signals and the inconsistent valuing of flexibility

9. The consultation paper fairly reflects what we also hear across the sector. In particular, we endorse the stakeholder feedback highlighted in the paper that there is a growing need for firming and flexibility but that the market is not fully enabling it, that current price and market signals alone are too incomplete or poorly translated into investable demand side responses and that flexibility is not consistently valued across transmission, distribution and market settings.
10. This feedback is consistent with the Electricity Authority's own findings from its recent flexibility and non-traditional solutions workshops. The Authority noted that, across stakeholders, flexibility is unlikely to develop at scale without some form of coordination or intervention.¹ It also identifies poor visibility of value and system needs as one of the main barriers to flexibility investment. This aligns closely with the System Operator's own stakeholder feedback and reinforces that the main barriers are ones of market design and coordination rather than technology.
11. The same conclusion is reached by successive credible reviews over the past year. Independent analysis from the Boston Consulting Group, the OECD, the New Zealand Infrastructure Commission and EECA has consistently found that New Zealand has both a significant need for flexibility and substantial untapped potential, and that current market incentives are inadequate to realise it.² As one indication of scale, modelling for EECA estimated that demand side flexibility could shift around 1,350 GWh of energy away from peak periods, rising over time, with associated avoided investment in generation and network infrastructure.³ There is now a strong and consistent evidence base that this is a real and material opportunity.
12. Of these reviews, we consider the Boston Consulting Group's analysis provides the most directly relevant insight for the System Operator. In its analysis of the August 2021 supply shortfall, BCG observed that an estimated 112MW of residential hot water load was not called on to help meet the record peak, because of visibility and coordination challenges between distribution network operators and the System Operator during the rapid onset of the event. This is an important example. It demonstrates that valuable demand side flexibility already existed but could not be relied on when it was most needed, precisely because of the visibility and coordination gaps that modern DLC is designed to resolve. It illustrates why the shift from ripple to smart meter based control matters for system security, not just for consumer cost.

¹ Electricity Authority (2026), Summary: flexibility and non-traditional solutions workshops, published 7 July 2026.

² Boston Consulting Group (2025), Energy to Grow: Securing New Zealand's future; Organisation for Economic Co-operation and Development (2026), OECD Economic Surveys: New Zealand 2026; New Zealand Infrastructure Commission Te Waihanga (2026), Shifting Currents: Energy Infrastructure in Transition; Jacobs and Energy Efficiency and Conservation Authority (2026), The Full Potential of Flexible Electricity Use in New Zealand: Summary and Insights Report.

³ Jacobs and Energy Efficiency and Conservation Authority (2026), The Full Potential of Flexible Electricity Use in New Zealand: Summary and Insights Report.

Third, credible solutions are emerging, but there is no clear process for assessing and ranking the options

13. A number of mechanisms are now being proposed to address these barriers. The Sustained Reserve concept proposed by BCG is a strong example of a relatively straightforward solution that would directly address several of the barriers raised to both Transpower and the Authority. By valuing flexibility that can respond quickly and be sustained over a multi hour period, it would provide a clearer investment and operational signal for resources such as aggregated hot water DLC, whose natural response profile is well suited to that need. Other proposals, such as a broader Firming and Flexibility Market recommended by the OECD, seek to address related gaps.⁴
14. Our observation is that there is currently no clear or transparent process for assessing, ranking and implementing the various options being proposed across the sector. Proposals are emerging from different reviews and different parties, but it is unclear how they will be evaluated against each other, who is accountable for that assessment or how a preferred option would be progressed to implementation. This risks credible and relatively simple solutions stalling despite broad agreement on the underlying problem. The consultation paper itself notes that security of supply assessments currently signal a need but do not carry triggering actions or outcomes. The same gap applies to flexibility more broadly.

Fourth, Transpower is an important stakeholder and we encourage a more proactive role in assessing options

15. We recognise that the System Operator has appropriately defined its role as implementing market design led by the Electricity Authority, and that market design and the creation of flexibility products sit with the Authority and MBIE. We are not suggesting the System Operator take on the role of market designer.
16. However, Transpower is one of the most important and credible stakeholders in this area. It holds unique data, forecasting and operational insight, it sees system needs in real time and in the planning horizon and it is trusted by the sector. The consultation paper commits the System Operator to informing the development of future market design and security of supply frameworks and to building visibility of what controllable load is available to support emergency management. We support these commitments and encourage Transpower to lean into them.
17. Specifically, we encourage Transpower to take a more proactive role in helping the sector assess and rank the options being proposed to address the market barriers to flexibility. This could include using its operational and modelling capability to test how well different mechanisms, including a Sustained Reserve, would perform against real system needs and providing that analysis transparently to the Authority, MBIE and the wider sector. Given the number of proposals now in circulation and the absence of a clear assessment process, this kind of informed, impartial contribution from the System Operator would add significant value and help convert broad agreement on the problem into progress on solutions.
18. We would be happy to engage further with Transpower on the operational reliability characteristics of aggregated hot water DLC, on the data and visibility arrangements that would allow it to be relied on within system operation, and on the practical experience we have gained operating this resource in both New Zealand and Australia.

Yours sincerely



Matt Bostwick
Chief Customer Officer NZ

⁴ Organisation for Economic Co-operation and Development (2026), OECD Economic Surveys: New Zealand 2026.