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Electricity Authority

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Submission on Electricity Authority Consultation Paper – Ensuring an Orderly Thermal Transition

Introduction

1. Energy Resources Aotearoa is New Zealand's peak energy advocacy organisation. Our purpose is to enable constructive collaboration across the energy sector through and beyond New Zealand's transition to net zero carbon emissions in 2050.
2. This document constitutes our submission on the Electricity Authority's (**the Authority**) consultation paper titled *Ensuring an Orderly Thermal Transition* (**the consultation paper**).

Submission

The risk of a disorderly thermal transition requires ongoing and active management

3. We note the Authority's view that the overall risk of a disorderly thermal transition in general is relatively low at present, based on its own work and the report it commissioned from Concept Consulting.
4. However, the risk of disorderly transition is not zero, and views on this vary widely. We are concerned by indications of a flexible energy supply gap that is opening as electricity demand (particularly peak demand) increases. If this trend continues – and generation capacity falls behind, or fuel supplies diminish – the risk of disorderly thermal transition could materially increase quickly. Specifically, we note with some concern that:
 - the System Operator has, at time of writing, already issued eight low residual situation notices since the start of May 2023, despite hydro storage sitting well above historical averages; and
 - the 13 July 2023 release of updated petroleum reserves data shows a significant decline in gas reserves (a 17% decrease in 2P reserves).

5. These market coordination, investment, and fuel supply challenges will persist over the next decade. The System Operator has recently released its Security of Supply Assessment (SOSA) for 2023, which sees North Island winter capacity margins and New Zealand winter energy margins cross upper security standards as early as 2025 and 2027 respectively (this is pushed out a few years if all consented supply projects are included, but these are less certain to come to fruition). Notably, the sensitivities that have the greatest impact on the North Island winter capacity margin include ‘thermal decommissioning’ and ‘no new thermal development’.
6. On release of the SOSA, the System Operator ‘called for “urgent investment” in flexible resources, which “...could come in the form of new flexible generation, including flexible peaking plant” as well as grid-scale batteries and demand response.’¹ At the very least, the stark contrast between the System Operator’s call for urgent investment on one hand, and the Authority’s comparatively sanguine view of thermal transition risk on the other, strengthens the case for considering the full range of analyses and views.
7. We note increasing public sentiment and a cacophony of policy signals in favour of decarbonising, and announcements from financiers to limit funding for fossil fuel projects, that may influence decision-makers and accelerate decommissioning ahead of what is preferable from a system-level perspective.²

Sector views on future electricity supply & demand agree that overall thermal electricity generation will decline, but views differ on the specifics

8. We commend the Authority commissioning the Concept Consulting report to provide a ‘deep dive’ on thermal transition issues, and it is a useful contribution to the ongoing discussion. The Authority should continuously assess this risk and incorporate the views and analysis of others (including the System Operator’s SOSA). It could specifically task the Security and Reliability Council to investigate and/or monitor this risk, and to report back on a regular basis, including considering the risks to both fuel supply and generation capacity.
9. The Concept Consulting work generally accords with other sector assessments of the future of electricity supply and demand, in that it predicts a material decline in overall thermal generation. It is generally accepted that thermal will transition away from baseload generation but play an important role as back-up to the increasingly renewable system (i.e., seasonal, peaking, and hydro-firming).
10. Where it departs markedly from others is that the Concept Consulting report does not see a case for investment in new thermal fast-start capacity, at least to 2032.

1 <https://www.transpower.co.nz/news/increased-investment-flexible-resources-needed-transpower-report-shows>

2 By way of example ANZ has faced increasing shareholder activism in relation to its lending practices in relation to oil and gas exploration. See <https://businessdesk.co.nz/article/finance/shareholders-hammer-anz-over-fossil-fuel-funding>

This is an outlier – most assessments do identify a case for new capacity sometime in the 2020s and 2030s and we have heard multiple sector participants (including the System Operator) call for new flexible supply-side resources as a matter of priority.

11. Several additional factors might explain this discordant conclusion:
 - the Concept Consulting work might, if extended, identify a case for investment in new thermal fast-start capacity beyond 2032 (as other reports do);
 - the Concept Consulting work appears to conclude that some existing slow-start thermal assets could meet demand as 'medium-start' capacity, while other reports assume decommissioning of these slow-start assets replaced by new fast-start assets; and
 - the Concept Consulting work assumes a significant portion of supply-side flexibility is instead provided by grid-scale battery storage (it's not clear to what extent this differs from other assessments).
12. We suggest further modelling could explore these dependencies and variables by considering a broader range of potential scenarios, covering the risks and other issues mentioned thus far – including longer time horizons, modelling varied gas supply scenarios, and considering slower/faster uptake of alternatives like grid-scale batteries.
13. In any case, this difference of view illuminates the breadth of uncertainties around the future of thermal capacity. In our view this highlights the need for system settings to retain optionality and the ability to respond to changing circumstances, particularly given the economically and socially damaging consequences of a disorderly thermal transition. For example, if grid-scale battery storage uptake falls short of expectations (i.e., forecast drops in battery costs do not eventuate), or if growth in renewable generation falls short, the case for new investment in fast-start thermal capacity may strengthen – and could become a matter of urgency.
14. For reference, we have included below a summary of the varying views on future electricity demand, as well as the need for new thermal fast-start capacity (note in many cases this new capacity is offset, at least partially, by the decommissioning of existing slow-start capacity). Note that these reports use different reference periods and timeframes, so these figures are not necessarily directly comparable. Relevant years are noted to assist.

Date	Report	Total electricity demand	New thermal peaking capacity
May 2023	Concept Consulting's report for the Electricity Authority ³	50 TWh in 2032	None, at least until 2032
Apr 2023	EnergyLink's Role of Gas in Electricity and Industry ⁴ Low demand and high demand cases (note these only run to 2038)	Low demand: 46 TWh in 2038 High demand: 54 TWh in 2038	Low demand: 200 MW by 2035 High demand: 320 MW by 2035
Oct 2022	BCG's The Future is Electric ⁵ Preferred pathway (Smart System Evolution)	54 TWh in 2030 77 TWh in 2050	200 MW by 2030 400 MW by 2040 600 MW by 2050
May 2021	BusinessNZ Energy Council's TimesNZ 2.0 ⁶ Kea and Tui scenarios	Kea: 45 TWh in 2030 75 TWh in 2050 Tui: 54 TWh in 2030 83 TWh in 2050	Kea: 200 MW by 2030 1,830 MW by 2050 Tui: 400 MW by 2030 1,770 MW by 2050
May 2021	Climate Change Commission's <i>Inaia Tonu Nei</i> ⁷ Demonstration pathway	50 TWh in 2035 66 TWh in 2050	200 MW by 2035
Mar 2020	Transpower's <i>Whakamana I Te Mauri Hiko</i> base case ⁸	55 TWh in 2035 70 TWh in 2050	400 MW by 2035
Jul 2019	MBIE's Electricity Demand and Generation Scenarios ⁹ Reference and disruptive cases	Reference: 49 TWh in 2035 / 57 TWh in 2050 Disruptive: 55 TWh in 2035 / 71 TWh in 2050	Reference: 490 MW by 2035 / 930 MW by 2050 Disruptive: 940 MW by 2035 / 1,340 MW by 2050

3 https://www.ea.govt.nz/documents/3147/Appendix_C_-_Concept_Consulting.pdf

4 <https://www.energyresources.org.nz/dmsdocument/243>

5 <https://www.bcg.com/publications/2022/climate-change-in-new-zealand>

6 <https://times.bec.org.nz/>

7 <https://www.climatecommission.govt.nz/public/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa.pdf>

8 See Transpower's *Whakamana I Te Mauri Hiko* report, available at <https://tpow-corp-production.s3.ap-southeast-2.amazonaws.com/public/publications/resources/TP%20Whakamana%20i%20Te%20Mauri%20Hiko.pdf?VersionId=FljQmfxCk6MZ9mlvpNws63xFEBXwhX7f>

9 <https://www.mbie.govt.nz/dmsdocument/5977-electricity-demand-and-generation-scenarios-report-2019-pdf> (note this is currently being updated, but at time of writing, the 2019 EDGS is the most recent report.)

Authority's preliminary assessment of options to address thermal transition risk

15. We agree with the Authority's description and characterisation of the information and incentive risks to thermal transition laid out in section 4.
16. Likewise, we generally agree with the Authority's assessment of the high-level policy options identified to address thermal transition risk. We generally prefer market-led solutions, and all efforts should be made to enable the energy-only market to provide the required signals and incentives before alternative non-market solutions are progressed.
17. Existing mechanisms – such as swaptions and other forward contracting – should provide sufficient signals about thermal capacity requirements, but this might be challenged as assets transition to lower rates of utilisation. It will be important to ensure mechanisms effectively smooth out revenue to establish a long-term price signal for generators and to support investment in necessary new fast-start capacity.
18. The Authority notes that some of the options identified could be progressed if the risk of a disorderly thermal transition increases. It would be worthwhile to specify with further detail what an increased risk might look like, and how this will be identified – for instance:
 - how frequently the Authority intends to re-run the Concept Consulting analysis to update its assessment;
 - how analysis by other parties might be factored into an ongoing assessment of this risk; and
 - potential 'trigger events' for an immediate reassessment of risk, such as the announcement of a previously unanticipated decommissioning of a thermal asset or significant policy announcement (while retaining the flexibility to react outside this framework).

There are additional options to address investment risks, but some these are beyond the Authority's remit

19. In our response to the Authority's November 2022 consultation on the operational (unit commitment) risks to thermal, we stressed the apparent need for additional fast-start capacity and offered our view on how to restore investment confidence so that it can be built (if/when it is desirable from a system perspective). We repeat these recommendations here as they remain relevant, notwithstanding these are outside the Authority's remit:
 - **remove the 'aspirational' target of 100% renewable electricity by 2030** – already-consented gas-fired peaking generation is not proceeding while the target (even aspirational) remains in place, because it brings a credible risk of

future government intervention to achieve it. These critical investments cannot be justified with an assumed end date of 2030;

- **reverse the 2018 ban on new offshore oil and gas exploration** – the ban fundamentally undermined investment confidence in the upstream sector, and over the long term will have a dampening effect on the upstream investment required to secure stable and affordable long-term supply of gas;
- **rule out further development of the Lake Onslow pumped hydro scheme** at the conclusion of Phase One of the NZ Battery project – the spectre of this significant market intervention is creating significant uncertainty and undermining investment confidence across the energy value chain; and
- **recognise and reaffirm the role of natural gas in the transition** – the Gas Transition Plan and National Energy Strategy offer an opportunity to ‘reset’ our policy posture toward the gas sector and to pursue an orderly transition toward net zero that does not undermine energy security or affordability. A rising carbon price under the ETS is sufficient to drive a market-led disincentive for higher-cost thermal (particularly baseload) generation.

20. Further, we note that resource consenting reform has a critical role in enabling investment in renewable generation, transmission, and distribution at the pace required. We therefore strongly support enabling RMA National Policy Statement and Environmental Standards, and timely resolution of RMA reform efforts.¹⁰

Fuel supply and infrastructure are directly relevant to questions of thermal transition

21. We note the Concept Consulting work assumes gas supply remains available, as its focus is on capacity investment and decommissioning decisions. But fuel supply cannot be ignored in the Authority’s broader risk assessment. Recent updates to petroleum reserves data further emphasise the need for an investment confidence ‘reset’. 2P reserves have dropped 17% and are now below ten years’ supply for the first time. We suggest this reflects significantly diminished investment confidence in the upstream oil and gas sector.
22. Likewise, we acknowledge the Authority has specified that gas transmission and distribution infrastructure is out of scope of this work. Further reviews of thermal transition risks should include close engagement with other agencies on infrastructure interdependencies (for example, engaging with MBIE and the Gas Industry Company as the forthcoming Gas Transition Plan takes shape). This will help to ensure that the interlinked elements of the gas system work together in an orderly transition.

10 For our latest commentary, see our submission on national direction for renewable energy at <https://www.energyresources.org.nz/dmsdocument/247>

23. We recommend the Authority should ask the Security and Reliability Council to support its ongoing monitoring of these risks. This could include asking the Council to investigate the broader question of thermal transition, including fuel supply availability, and to report back on its findings.

Conclusion

24. Our submission makes clear that we are concerned about an emerging energy gap, if the risk that electricity peak demand grows faster than we can put in place flexible demand and supply side resources to meet it eventuates. Despite a chorus of sector voices identifying a need for additional fast-start thermal capacity, policy settings and the prevailing tone toward the role of natural gas are undermining signals to invest.
25. We urge the Authority to continue monitoring these issues, and where it has concerns about capacity and/or fuel availability, to make these concerns known.