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POWERING A BETTER NEW ZEALAND TOGETHER

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Electricity Authority

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Submission on improving incentives for long-duration firming

Introduction

1. Energy Resources Aotearoa is New Zealand's peak energy sector advocacy organisation. We represent participants from across the energy system, providing a strategic sector perspective on energy issues and their adjacent portfolios. We enable constructive collaboration to bring coherence across the energy sector through and beyond New Zealand's journey to net zero carbon emissions by 2050.

2. We thank you for the opportunity to provide feedback on the Electricity Authority's ('the Authority') issues and options paper from October 2026 on Improving incentives for long-duration firming. We support the Authority's expansion of discussion to move beyond dry-year cover, and its consideration of differing needs and responses for a range of long-duration firming options.

3. New Zealand's general election occurs during this consultation period, and many energy questions are under the spotlight, such as whether the LNG terminal will eventuate as a fuel option, and what happens if it does not.

4. We believe the Authority in its independent regulatory capacity is well placed to provide an apolitical, evidence-based assessment of the electricity system's requirements, the risks of supply shortfalls, and the market settings needed to encourage investment. This work can provide a durable reference point for market participants, investors and policymakers, irrespective of changes in government priorities.

Overarching feedback

5. We support the Authority's focus on improving the information, incentives and contracting arrangements that underpin investment in long-duration firming. A well-functioning energy-only market[1] should be capable of delivering the resources required for reliable round-the-clock energy, provided participants have confidence in the market signals and sufficient certainty about future

[1] An energy-only market means only energy produced is traded. Holding capacity is not included in the market.

system requirements. This is why the Authority's assessment of the long-duration firming gap is essential, and complementary to the work being done by Transpower (Te Kanapu future energy scenarios) and MBIE (Winter Energy Reliability Obligation ('WERO').

6. However, further work is needed to test the assumptions underpinning the Authority's assessment. In particular, the conclusion that the gap is likely to decline over time is sensitive to assumptions about renewable generation investment, demand growth, thermal availability, gas supply, hydro storage and demand response. These assumptions should be tested against a wider range of plausible scenarios, including circumstances where expected investments or fuel supplies do not eventuate. Electricity infrastructure planning should take a conservative approach to forecasts, which are frequently overly optimistic.[2]

7. The growth of renewable generation will make an important contribution to New Zealand's electricity supply. However, additional annual renewable generation does not necessarily provide firm energy during prolonged periods of low wind, solar output, and hydro inflows. Similarly, short-duration batteries, gas storage, and demand response have important roles, but their ability to address sustained energy shortages should not be overstated.

8. We are particularly concerned that the consequences of declining domestic gas supply may not be fully reflected in the modelling. Conversely, any new gas coming to market should also be modelled. If gas is increasingly retained for industrial users, rather than being available for electricity generation, and an LNG import facility does not proceed, the electricity system may face a significantly different firming need.

9. The Authority should avoid treating a declining modelled energy gap as evidence that the underlying physical risk is necessarily declining. A robust assessment must consider the expected trajectory *and* the consequences of adverse but plausible scenarios.

10. One of the key reasons we may not be getting sufficient firming built is sovereign risk and the uncertainty as to whether thermal investments, once made, are kept whole and not subsequent to the investment being made returns being expropriated by regulatory fiat.

11. There is also an inherent political tension that as we develop a more highly renewable system, thermals get pushed up the load duration curve to the point

[2] Australia's experience illustrates the risks: major renewable projects such as Snowy 2.0 have faced significant cost overruns, while essential gas-fired generation projects have stalled amid rising costs and insufficient long-term revenue certainty. Snowy 2.0, Australia's 2,200 MW pumped-hydro storage project, illustrates the risks of optimistic infrastructure forecasts. Originally estimated at A$6.1 billion at final investment decision in 2018, its target cost increased to A$22.2 billion in October 2026, with a potential cost scenario of A$25 billion. Completion is now expected in late 2029, following significant design, geological and construction challenges.

that they need periods of extremely high prices to underpin the investment. This is not a desirable outcome.

Key messages and recommendations

12. **Our key messages** aim to ground the assessment in reality:

    a the Authority's assessment should be strengthened. The conclusion that the long-duration firming gap will decline is sensitive to assumptions that warrant further testing and transparent disclosure;

    b annual renewable generation is not the same as firm energy. The analysis must distinguish between annual energy adequacy and the ability to maintain supply during prolonged periods of low renewable output and hydro inflows;

    c gas availability and allocation need to be explicitly tested in scenarios. Declining domestic gas production, the availability of gas for electricity generation, industrial gas requirements, new gas coming to market, and the possibility that LNG does not proceed all need to be tested;

    d firming resources must be assessed according to their actual capabilities. Batteries, demand response, renewable overbuild, hydro storage and dispatchable generation provide different services over different timeframes. Their contributions should not be treated as interchangeable; and

    e the market needs durable, technology-neutral investment signals. The Authority should improve information, transparency and contracting arrangements while preserving the energy-only market and allowing competing technologies to establish their value.

13. The Authority has an important independent role. Regular, apolitical assessment of long-duration firming requirements can provide confidence to investors and support the development of new firming options, regardless of changes in government policy. However, the assumptions and forecasts must be sensible.

14. **We recommend** that the Authority:

    a publish regular assessments of long-duration firming requirements using a transparent and established methodology;

    b expand its modelling sensitivities to test gas, LNG, thermal availability, renewable build-out, demand growth, and demand response assumptions;

    c assess seasonal, multi-week, multi-month and multi-year risks, rather than relying on annual energy balances alone;

d improve the transparency of existing firming arrangements, while protecting legitimate commercial confidentiality;

e develop practical guidance and building blocks for long-duration firming contracts;

f work with industry to develop voluntary, technology-neutral standardised contract products; and

g retain a mandated sell-side auction as a potential backstop if voluntary arrangements do not deliver sufficient liquidity and price discovery.

Alignment with wider electricity-sector planning and reliability work

15. Investors need one coherent picture of the problem and a credible pathway for the market to respond. That means three things:

    a a credible assessment of need – using Transpower's *Te Kanapu* range of future pathways and the Authority's more detailed stress testing;

    b a durable demand signal – through a properly designed Winter Energy Reliability Obligation ('WERO') that creates an incentive to secure long-duration energy, without unnecessarily distorting competition; and

    c a functioning route to market – aided through the Authority's work on information, contract transparency, standardised products, and price discovery.

16. The Authority's work on long-duration firming should be considered alongside *Te Kanapu* scenarios (see our last submission) and the WERO (see our last submission). These initiatives address different but closely related parts of the same investment challenge.

17. *Te Kanapu* provides a range of possible future demand and generation pathways, informing long-term grid and infrastructure planning. WERO seeks to establish incentives and obligations for market participants to secure sufficient long-duration energy cover. The Authority's work can help bridge the two by improving information and market arrangements.

18. These work programmes require consistent assumptions and need to inform one another. The Authority's assessment of long-duration firming should be tested against the range of demand and generation scenarios developed through *Te Kanapu*, rather than relying on a single central projection. It should also recognise the potential contribution of new domestic gas supply, LNG, alternative thermal fuels, biomass, geothermal, storage, and other emerging firming options.

19. Together, these initiatives have the potential to provide investors with a clearer understanding of New Zealand's firming requirements and the role different resources could play. This is particularly important for investments with long development lead times and substantial upfront capital requirements.

20. A reliability obligation may create demand for firming, but investors also need confidence that the market will provide viable contracting arrangements and sufficiently durable revenue signals.

21. The Authority's independent, evidence-based role is important in this respect. Its analysis can provide a common reference point for market participants, investors and policymakers, helping to reduce uncertainty without prescribing particular technologies or investment decisions.

22. We encourage the Authority to work closely with MBIE, Transpower and market participants to ensure that these initiatives are complementary, that their assumptions are transparent and consistent, and that together they support timely, efficient and competitive investment in New Zealand's long-duration firming capability. If this requires pausing further work until decisions have been taken on *Te Kanapu* and the WERO, then we support that.

Implications for investment and market participants

23. The Authority's assessment of long-duration firming will influence investment decisions across the electricity and wider energy sectors. It is important that its analysis does not inadvertently embed assumptions that favour particular technologies, fuel sources or investment pathways.

24. Existing generators (including those providing thermal generation and hydro storage) need a clear understanding of the future value of their contribution to system security. At the same time, prospective investors in domestic gas supply, gas storage, biomass, geothermal, renewable generation and other firming options need confidence that the market will recognise and reward the energy security services they can provide.

25. The Authority should test alternative supply and demand scenarios. These could include, for example, the potential for new domestic gas investment, changes in the availability of existing thermal generation, different rates of renewable development, and the contribution of emerging firming technologies. It should also recognise that the contribution of each resource depends on its availability, duration, fuel supply, operating constraints, and ability to deliver during periods of system stress.

26. The Authority's assessment will provide the information, market signals and investment confidence necessary for businesses to respond to the system's long-duration firming requirements, and market arrangements that support competition and investment across a range of potential solutions.

Five key themes to test future modelling

27. We have identified five key themes to take forward into the next stage of this work. We have labelled these as 'themes' to avoid confusion with the Authority's questions in the issues and options document. They do address those questions, but in a thematic way.

Theme 1: Is New Zealand's long-duration firming gap genuinely declining?

28. We agree that renewable generation investment has the potential to reduce the expected frequency and severity of energy shortfalls. However, we are not yet convinced that the modelling provides sufficient confidence that New Zealand's underlying long-duration firming risk will decline.

29. The Authority's analysis and the Sapere assessment use different approaches and reach somewhat different conclusions. Sapere's analysis considers annual energy balances, while the Authority's own analysis examines three-month periods. This is an important distinction because a difficult winter or prolonged period of low renewable output can occur even in a year, like 2026, with average or above-average hydro inflows.

30. The Authority's own modelling relies on a number of important assumptions. These include:

    a 1 TWh of hydro energy available from storage;

    b sufficient coal to operate three Rankine units for three months;

    c gas-fired generation supported by minimum contracted gas and 1.3 PJ from Ahuroa storage;

    d three months of demand response from Tiwai Point, equivalent to its contractual maximum of 185 MW; and

    e realisation of 90% of committed and actively pursued generation projects.

31. Average renewable generation capacity factors (based on historical output) provide a useful starting point, but they do not necessarily represent the resources that will be available under all future conditions. In particular, the modelling should test the consequences if gas availability is lower than assumed, thermal generation becomes unavailable, or generation projects do not proceed as anticipated.

32. We think the following scenarios are particularly important:

    a **No LNG:** Domestic gas production continues to decline and no LNG import facility is established. What is the resulting firming requirement, particularly during prolonged dry periods?

b **Industrial gas priority:** Remaining domestic gas is increasingly retained for industrial users, reducing the availability of gas-fired generation. What are the implications for electricity supply and industrial production?

c **Accelerated thermal decline:** Existing thermal generation becomes less available or retires sooner than anticipated. What replacement firming capacity and energy would be required?

d **Renewables and storage growth:** How much does accelerated investment in wind, solar, geothermal and batteries reduce the energy gap, and over what duration can these resources provide reliable supply?

e **Higher demand:** How sensitive are the results to faster evolution to electrification, industrial demand, data centres and broader economic growth?

33. The Authority should also distinguish between the capacity required to meet intermittent peak demand (MW) and the energy required to meet sustained demand over a prolonged shortage (GWh or TWh). These are different problems and require different solutions.

34. The central question is not simply whether renewable generation reduces the expected annual energy gap. It is whether the system will have sufficient firm energy available when several adverse conditions occur in various combinations.

Theme 2: Are the identified market barriers sufficiently comprehensive, and are there others?

35. We broadly agree that the Authority has identified relevant barriers to investment in long-duration firming. These include uncertain and infrequent revenue opportunities, limited market liquidity, imperfect information, and a mismatch between the time horizons of buyers and sellers.

36. However, the barriers should also be considered in the context of uncertainty about future system requirements.

37. Potential investors need confidence that the scale and duration of the firming's value will be recognised by the market. If the Authority's modelling suggests that the long-duration firming gap will largely disappear, this may unintentionally weaken investment signals for new firming resources, even where significant risks remain under alternative scenarios.

38. Other barriers include such things as uncertainty about future gas availability and fuel costs, regulatory and consenting pathways, unclear future values of firming technologies and fuels, and there being a limited number of potential buyers and sellers in a relatively small market.

39. The Authority should distinguish between barriers arising from market design and those arising from wider policy, regulatory, geopolitical and investment uncertainty. Uncertainty can come about from many avenues, but sovereign risk is particularly relevant to the firming of electricity.

Theme 3: How should long-duration firming risks be assessed and reported?

40. We support regular reporting using an established and transparent methodology.

41. The assessment should cover more than annual dry-year energy balances. It should capture the range of risks that can affect a highly renewable electricity system, such as:

    a seasonal dry-year energy risk;

    b multi-week periods of low wind and solar generation;

    c prolonged low hydro inflows;

    d multi-year carryover risks;

    e thermal generation and fuel supply outages; and

    f demand growth and changes in the shape of electricity demand.

42. The Authority should publish the key assumptions underpinning its analysis, including the expected availability of gas, coal, hydro storage, batteries, demand response and new generation projects. It should also disclose the sensitivity of results to changes in these assumptions.

43. In particular, the Authority should distinguish between projects that are committed, under construction, consented, actively pursued or merely proposed. Applying a single realisation assumption to projects at different stages of development risks overstating future supply.

44. The analysis should report both the expected energy gap and the scale of the shortfall under adverse scenarios. Useful measures would include the size of any energy deficit in GWh or TWh, the duration of the shortage, the dispatchable capacity required and the resources available to meet it.

45. The methodology should be reviewed regularly as technology costs, investment pipelines, fuel availability and demand forecasts change.

Theme 4: What information, guidance and contracting arrangements would support investment?

46. We support the Authority's proposed measures to improve transparency and the development of practical guidance for firming contracts.

47. Better information on the nature and availability of existing firming arrangements can help participants understand the market and assess opportunities to invest. However, disclosure requirements must be carefully designed to protect commercially sensitive information, particularly in a small market where individual contracts may be readily identifiable.

48. We support aggregated and anonymised reporting where this can improve market visibility without imposing unjustified costs or compromising legitimate commercial confidentiality.

49. The Authority could also work with industry to develop practical guidance or building blocks for long-duration firming contracts.

50. We support exploring standardised or semi-standardised long-duration firming products. These could improve comparability, liquidity and price discovery while retaining sufficient flexibility for parties to negotiate arrangements suited to their particular requirements.

51. Contract design should remain technology and fuel-neutral and recognise that different resources provide different types of firming. Products should not inadvertently favour one technology or fuel or exclude new and emerging solutions.

52. The tenor gap is also important. This refers to the mismatch between developers of long-lived assets requiring longer-term revenue certainty than buyers are willing or able to provide. The Authority should explore how standardised products, longer-term contracting arrangements and options-based products could help bridge this gap without imposing unnecessary obligations on market participants.

Theme 5: What interventions are appropriate to improve incentives and support demand response?

53. We support the Authority's preference for improving information, transparency and contracting arrangements before considering more prescriptive interventions. Some of these were suggested in the issues and options paper and we provide our preliminary thoughts below:

    a a **mandated sell-side auction** could help reveal the value of firming products and improve liquidity. However, this should remain a backstop option rather than an immediate requirement. The Authority should first allow voluntary contracting arrangements and recently introduced non-discrimination obligations (NDOs) to operate, then assess whether further intervention is warranted.

If an auction is progressed, it should avoid undermining existing bilateral arrangements or imposing unnecessary compliance costs. The Authority should also carefully consider what qualifies as firm energy, the appropriate volume and duration of products, and how physical availability is demonstrated;

b we do not think that a **capacity market or central procurement model** (such as the proposed 'Thermal Co') is warranted at this stage. Such approaches would represent a significant departure from the existing energy-only market and risk transferring investment and procurement decisions away from market participants.

Demand response can make a valuable contribution to system security, particularly during periods of high demand and tight supply. However, it should not be treated as an unlimited source of firming; and

c the Authority itself recognises that **sustained reductions in electricity use** over weeks or months can impose significant costs on economic activity. This is particularly relevant where industrial demand response affects production, employment and export earnings.

The Authority should assess demand response according to its actual availability, duration, reliability and economic cost. It should distinguish between short-term flexibility, such as shifting demand during peak periods, and sustained reductions in consumption (e.g., shutdowns) during prolonged energy shortages.

54. We support measures that enable consumers and businesses to participate voluntarily in demand response arrangements and receive appropriate compensation for the value they provide. However, demand response should complement investment in supply-side firming, not substitute for it.

Concluding remarks

55. Energy Resources Aotearoa supports a market-led, technology-neutral approach. New Zealand needs sufficient reliable and affordable energy to support households, businesses and the wider economy, while enabling emissions reductions over time.

56. The Authority's independent assessment of long-duration firming requirements is an important contribution to achieving that outcome. In this submission we have outlined some key overarching feedback on the modelling and assumptions and recommendations for taking this to the next stage.

57. We welcome the opportunity to contribute to this work.