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Dear Sir/Madam

Waikato Regional Council staff feedback on: A Proposed Reliability Obligation to Manage Dry-year Risk

Thank you for the opportunity to provide feedback on A Proposed Reliability Obligation to Manage Dry-year Risk. Please find attached the Waikato Regional Council's staff feedback on the consultation. The feedback was signed under delegated authority.

Should you have any queries regarding the content of this document please contact Michelle White, Senior Policy Advisor, Strategic and Spatial Planning, directly on (07) 859 0961 or by email Michelle.White@waikatoregion.govt.nz.

Regards,

Privacy of natural persons

Lisette Balsom
Manager, Strategic Policy Implementation

Waikato Regional Council staff feedback on A Proposed Reliability Obligation to Manage Dry-year Risk

Introduction

1. Waikato Regional Council staff appreciate the opportunity to provide feedback on A Proposed Reliability Obligation to Manage Dry-year Risk.

2. Our organisation has an interest in energy and in particular hydroelectricity because:
   a. We have recently completed a review of our Regional Energy Strategy.
   b. We have statutory responsibilities under the Resource Management Act 1991 (RMA) and the operative Waikato Regional Policy Statement (WRPS) for the sustainable management and allocation of natural resources that contain energy, and the strategic integration of energy related infrastructure with land use.

3. We have provided targeted feedback, responding to seven of the consultation questions, based on staff expertise and regional insights.

4. We support the need to strengthen New Zealand's energy security; however, have concerns with some aspects of the approach:
   a. **Constraints on hydro-based firming are understated**. The contribution of hydro storage to energy security is constrained by environmental limits, cultural values, and competing water demands.
   b. **The extent of dry-year risk may be underestimated.** Recent experience in the Waikato suggests the scale of dry-year risk may be underestimated.
   c. **Low-emissions alternatives can significantly improve system resilience.** Renewable generation, battery energy storage, geothermal energy, demand-side management, distributed generation, and energy efficiency all have the potential to reduce exposure to dry-year risks and improve energy security.
   d. **Long-term reliance on LNG should be approached with caution.** While LNG may play a transitional role in maintaining security of supply, an over-reliance on imported gas risks discouraging investment in lower-emissions firming technologies, increasing exposure to international fuel markets, and slowing the transition away from fossil fuels.
   e. **Structural barriers to investment remain.** Features of New Zealand's energy-only electricity market continue to create challenges for investment in dry-year firming capacity, suggesting that further measures may be required beyond recent reforms.
   f. **Further consideration is needed on proposed adequacy obligations.** While we support exploring both long-term and short-term adequacy mechanisms, forecasting future supply risks is inherently uncertain, and implementation options should be carefully evaluated.
   g. **Low-emissions firming should be prioritised.** Policy settings should support investment in new firming energy capability, particularly low-emissions technologies such as geothermal energy, energy storage, demand response, biomass and other solutions that improve reliability while supporting emissions reduction objectives.

5. We look forward to any future consultation processes on this matter and would welcome the opportunity to comment further.

Submitter details

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Question 1: Do you agree with the analysis in this chapter of why New Zealand does not currently have sufficient dry-year firming?

We partially agree. While we agree with the key drivers contributing to New Zealand's insufficient dry-year firming capability, we consider that the analysis does not fully account for the constraints and risks of hydro generation or the role low-emissions alternatives could play in improving resilience and reducing exposure to dry-year risk.

Extent of dry-year risk and constraints on hydro-based firming

1. Recent experience in the Waikato suggests the system may be more vulnerable than the analysis implies. For example, 2024 was not a dry year in the Waikato, yet Lake Taupō, one of the country's largest hydro reservoirs, fell to very low levels despite starting the year with high levels and receiving average sustained inflows. This indicates that system stress can emerge even under typical conditions, likely reflecting high demand and limited alternative supply.

2. The Waikato State of the Environment report notes that the 2011-2020 decade recorded the lowest average rainfall, compared to previous decades, indicating a drying trend across the region.

3. It is important to recognise that hydro systems are, first and foremost, river systems that sustain people, ecosystems, and cultural values. This is reflected in the operating constraints placed on hydro generators by regional councils and the aim of the Waikato Regional Energy Strategy – to collectively advance all three elements of the energy trilemma (energy security, environmental sustainability and energy equity). Te Ture Whaimana o Te Awa o Waikato (the Vision and Strategy for the Waikato River) also reinforces the primacy of the river, requiring that its health and wellbeing are prioritised first; this takes precedence over any other national secondary legislation where there may be conflicts.

4. In the Waikato, increasing pressure on river flows is emerging from a combination of a drying climate, population growth in cities that depend on the river (such as Hamilton and Auckland), and greater reliance on irrigation to support food production during more frequent dry summers. Waikato is no longer a water rich region. Waikato Regional Council has subsequently drafted a Water Security Strategy detailing how we adapt to increasing drought frequency.

5. The Waikato River, sourced from Lake Taupo, sustains Hamilton, Auckland and many other towns, as well as the agricultural sector and industry. When the Huntly power station is operating (gas and coal fired), it also relies on sufficient flow in the Waikato River for cooling water. Reduced river flows increase the likelihood that Huntly power station operations risk overheating the river.

6. Hydroelectric generation is therefore only one of several competing demands on the river. These competing demands are managed through the operative Waikato Regional Plan, including Chapter 3 (Water Module), which establishes allocable flows, minimum flows and water management provisions to give effect to Te Ture Whaimana o Te Awa o Waikato. Holding water back to support winter power supply can potentially conflict with the needs of the river and its communities.

7. To date, large diversions into Lake Taupō from neighbouring regions (the Whanganui and Rangitikei catchments) have helped offset reductions in rainfall in recent decades. Nineteen percent of the inflow to the lake comes from these catchments via the Tongariro Power scheme. However, the resource consents for the Whanganui–Tongariro scheme diversions are due to expire in 2039, and there is no certainty they will remain in their current form. Any changes to these diversions would trigger the adaptive planning pathway under the Waikato Water Security Plan.

Low-emissions alternatives

8. As noted in the analysis, New Zealand's electricity system is undergoing a significant transition, with a changing generation mix characterised by increasing levels of geothermal, solar and wind generation and declining reliance on thermal generation and gas. While this shift presents challenges, it also offers opportunities to reduce exposure to dry-year risk if complementary investments are made. The discussion paper suggests that intermittent renewable generation contributes to the problem; however, renewables can also be part of the solution. Despite their variability, solar (both grid connected with distributed, network connected) and wind can supply a larger share of electricity demand when conditions are favourable, allowing hydro storage to be conserved and used for firming and supply during periods of lower renewable output. This can strengthen overall system resilience and reduce vulnerability to dry-year shortages.

9. The Waikato Regional Energy Strategy suggests that the region's exposure to dry-year electricity supply risks is expected to decrease over time as additional solar and wind generation, supported by battery energy storage systems (BESS), comes online. This increased renewable generation, together with growth in geothermal energy and a shift in the role of hydro generation from primary electricity production to system firming, is expected to enhance the resilience and reliability of the regional energy system.

10. Electricity is a real-time energy carrier that must be generated as demand occurs. Addressing energy security is therefore not solely a supply-side challenge; it can also be achieved by managing demand and improving energy efficiency. Reducing or shifting electricity consumption, alongside the adoption of more efficient technologies and equipment (e.g. home insulation and smart hot water cylinders), can help balance the system and reduce pressure on generation resources.

11. Another approach is to reduce reliance on the centralised electricity system by enabling consumers to generate their own electricity, for example through rooftop solar. Distributed generation can help meet daytime demand, reducing pressure on the grid and allowing more water to be retained in hydro lakes for use during periods of low inflows or dry-year conditions.

Question 2: What do you consider to be the principal remaining barriers to investment in additional dry-year firming following the recent reforms to improve fuel adequacy?

We consider the principal remaining barriers to investment in additional dry-year generation firming to be the potential over-reliance on LNG and persistent structural weaknesses in New Zealand's electricity market.

Long-term reliance on LNG

1. Greater reliance on LNG may reduce incentives for investment in alternative firming technologies and could affect the pace of transition toward lower-emissions energy sources. While the LNG import facility improves fuel adequacy and security, it does not address the underlying challenge of creating sufficient incentives for investment in dry-year firming capacity. By providing an additional source of firming fuel, LNG infrastructure may reduce scarcity signals and investment returns, potentially crowding out private investment in alternative firming technologies.

2. It is also notable that one potential means of meeting the proposed short-term reliability obligations would be through access to imported LNG. This raises questions about the extent to which the proposed framework may increase reliance on LNG infrastructure, including the proposed import terminal at Port Taranaki. Given the ongoing debate regarding the need for, costs of, and benefits associated with LNG import infrastructure, it would be helpful for the government to provide greater transparency on the role it expects LNG to play within the electricity system, including whether LNG

is intended primarily as a dry-year contingency measure or as a more regular component of the generation mix.

3. Reliance on LNG also introduces new risks and costs. Imported LNG is generally more expensive than domestic gas and exposes New Zealand to international fuel price volatility and global supply risks, potentially increasing overall system costs and undermining the economics of competing firming investments. More fundamentally, an increased dependence on LNG risks entrenching fossil fuel-based solutions at a time when investment is needed in lower-emissions alternatives. While LNG may have a role as a transitional or emergency source of firming supply, over-reliance on it could delay the development and deployment of low-emissions firming technologies by prolonging the role of gas. This risks deferring, rather than resolving, the transition to a more resilient, sustainable, and low-emissions energy future.

4. The Waikato Regional Energy Strategy identifies opportunities for improved energy security and reduced emissions through increased deployment of renewable energy sources. Increased investment in renewable energy sources, including geothermal, solar, and wind generation, is expected to improve energy security, reduce emissions, and strengthen the resilience of the regional energy system while supporting sustainable economic growth. Our modelling indicates that, under a proactive transition scenario – characterised by widespread electrification, expanded geothermal generation, increased solar and wind deployment, hydro operating primarily in a firming role, and the phased retirement of coal and gas – energy-related greenhouse gas emissions would be substantially reduced. At the same time, regional GDP is projected to grow, employment and wages are expected to increase, and the Waikato economy would become more resilient and less exposed to external economic and energy market shocks.

Structural barriers to investment

5. The reform package is largely incremental rather than structural, focusing on adjustments and enhancements to the existing market framework rather than fundamentally changing how the market delivers investment and system reliability.

6. New Zealand operates an energy-only market, where generators are paid primarily for the electricity they produce, rather than for maintaining capacity that may be only used during shortages. From our review of the discussion document and supporting material, it appears that New Zealand's energy-only market structure may present challenges for investment in assets that are only required during infrequent dry-year events. Because firming assets operate infrequently and derive much of their value from avoiding rare shortages, investors face significant revenue uncertainty. This challenge is compounded by market concentration, difficulties accessing hedge contracts, and uncertainty around future fuel supplies. As a result, the market may underinvest in the level of firm generation and storage required to manage dry-year risk efficiently.

Question 3: Do you agree that, despite the recent reforms to improve fuel adequacy, information, roles and tools, further measures are still needed to strengthen incentives to invest in dry-year firming?

1. The effectiveness (or otherwise) of recent reforms is not yet clear. It is noted, however, that the time lags for these policies to take effect, including for investments to come online, mean that there may be serious economic consequences – especially at the local level. If nothing further is done and these reforms prove inadequate, the consequences will be amplified.

2. We agree that further measures are still needed to strengthen incentives to invest in dry-year firming.

Question 4: Do you agree that there is value in building new measures on existing regulatory architecture, rather than creating an entirely new regime from first principles?

1. Both options – building on the existing regulatory architecture and establishing a new regime – should be carefully evaluated as part of a robust review.

Question 5: Do you agree that a long-term obligation should be introduced to strengthen incentives to secure sufficient dependable winter cover in advance where a forecast winter energy adequacy shortfall is identified?

We partially agree. Strengthening incentives to secure dependable winter cover in advance is a worthwhile objective. However, further consideration is needed on the proposed adequacy obligations.

1. Forecasting long-term adequacy risks is inherently uncertain. The proposed two-layer framework relies on the assumption that security-of-supply risks can be identified with reasonable confidence several years in advance. In practice, this may be challenging. For example, the risk of Lake Taupō reaching critical operating levels, with consequent restrictions on hydro generation due to consent conditions, may not become apparent until much closer to the event. In such circumstances, what appears to be a long-term adequacy issue could rapidly become a short-term reliability issue, blurring the distinction between the two obligation layers.

2. The proposed five-year horizon may be insufficient to support meaningful adaptation and investment decisions. Many of the measures that could improve long-term system resilience, including changes to the management of large hydro assets, development of new firming resources, or other significant infrastructure investments, can take considerably longer than five years to plan, consent, finance, and deliver. In the context of a changing climate and increasing uncertainty around future hydrological conditions, a longer-term planning lens may be required, supported by clear adaptation pathways, signals, and trigger points that indicate when additional investment or operational responses are needed.

3. There is merit in placing long-term adequacy obligations on retailers, while assigning shorter-term reliability obligations to generators. Aligning obligations with participants' ability to respond is likely to improve efficiency and accountability.

Question 15: Do you support the introduction of a short-term obligation as a targeted backstop where a near-term winter reliability risk emerges despite the operation of the long-term obligation?

See our response to Question 5, paragraph 1.

Question 20: What forms of firm energy fuel cover should qualify under the short-term obligation? In particular, how should hydro be treated, including whether, and in what circumstances, existing stored water should be capable of counting toward compliance?

Future energy planning should explicitly recognise that hydro generation operates within broader water allocation frameworks and environmental limits, including the allocable flow and minimum flow provisions established through Chapter 3 (Water Module) of the operative Waikato Regional Plan, rather than assuming additional water can be made available for electricity generation.

1. Hydro and geothermal should be recognised as key sources of firm energy cover. Priority should be given to low-emissions firming solutions, with fossil fuels recognised only as transitional measures where necessary to maintain security of supply while lower-emissions alternatives are developed and deployed.

2. Existing stored water should only count toward compliance where it can be clearly demonstrated that its use would not compromise environmental, as authorised by resource consent, or other operational constraints. Additionally, consideration should be given to recycling of water at elevation (e.g. pumped hydro) to maintain the topographic advantage and system storage.

3. The Waikato Regional Energy Strategy projects geothermal energy supply in the region to increase from 27,072 TJ in 2025 to 47,010 TJ by 2050 under the proactive scenario. This highlights the significant potential for geothermal energy to provide reliable firm energy supply within the Waikato and nationally. Several development and limited development systems have not yet been developed for heat energy potential, in addition, there are known sites of low temperature that may have potential for direct heat uses.

4. The framework should prioritise additionality. The objective should be to encourage investment in new firm energy capability and prudent reserve management, rather than enabling compliance through assets or resources that already exist and would be available regardless of the obligation.