Your Comment on the Lake Pūkaki Hydro Storage and dam Resilience Works

Please include all the contact details listed below with your comments and indicate whether you can receive further communications from us by email to substantive@fasttrack.govt.nz.

1. Contact Details			
Please ensure that you have authority to comment on the application on behalf of those named on this form.			
Organisation name (if relevant)	Electricity Authority		
First name	Hayden		
Last name	Glass		
Postal address	PO Box 10041 Wellington 6143		
Home phone / Mobile phone		**Work phone**	[redacted]
Email ***(a valid email address enables us to communicate efficiently with you)***	[redacted]		

2. We will email you draft conditions of consent for your comment			
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Please provide your comments below, include additional pages as needed.

Summary of this submission

1. Thank you for the opportunity to submit these comments.
2. Below we set out the Electricity Authority's views of the impact of suspending the current arrangements that determine access to Pūkaki contingent storage as requested in Meridian Energy's application (the proposal).
3. This submission is written reflecting the Authority's main statutory objective as explained below. As a result, it is focused on the impacts of the proposal on the power system. We do not offer views on other matters that will no doubt be part of the Panel's consideration.

4. In summary:

- The proposal should result in more competition for contingent energy resources (again, defined below) for the period it is in effect. This could benefit consumers by ensuring that the cheapest contingent resources are used first, rather than keeping Pūkaki contingent storage as a last resort even when it would be a lower cost option.
- The proposal could improve efficiency by enabling more flexible management of periods of low hydro inflows. Trade-offs between, for example, reducing industry output to reduce demand or using the Pūkaki contingent storage will be able to be made under the proposal in a way they cannot be at present.
- The proposal could also improve system reliability. Allowing Meridian the option to use Pūkaki contingent hydro more readily, means the system has more risk management options available. Choices about when to use generating plant with different risk profiles will be able to be made in ways they cannot at present.

Overall costs and benefits of the proposal

5. Due to the time constraints, we have relied on Meridian's modelling set out in its substantive application, and the System Operator's (SO) modelling: System Operator - Resource Adequacy - Dec2025.pdf.

6. This modelling shows that the main benefit of the proposal is to use more of the range of Lake Pūkaki. This lowers the total cost of the electricity system by $38m per year (SO modelling) because less coal is burned. This will lower costs to consumers to the extent that it lowers expectations of future spot prices — and hence forward contract prices — during scarcity events. The quantum of this benefit is uncertain.

7. The main cost of the proposal is an increased vulnerability to high impact low probability events, like an unexpected long-duration failure of a large thermal plant when combined with high demand and a period of low inflows into Lake Pūkaki. The cost takes the form of increased demand reduction when the system is under stress, ie, short of energy to meet demand.

8. The models agree that the benefits to relaxing the consent conditions are only in the short term — circa 3 to 5 years. This is reflected in the duration of Meridian's application. After that point, it is expected that competition from new generation will mean hydro lake storage will be held at higher levels in normal times, making access to contingent storage unlikely to be as valuable as it now.

The Electricity Authority's grounds for interest

9. This submission concerns the impact of Meridian's proposals on the power system, including the price of wholesale electricity and on ensuring that generation is always available to meet demand, which we call "security of supply".

10. The Electricity Authority's (EA) role is set out in the Electricity Industry Act 2010 (the Act). The most relevant section for this submission is 15(1):

> *The main objective of the Authority is to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.*

11. We understand that the System Operator (SO) has also been invited to make a submission on Meridian's application. Its public statements indicate that it is less supportive of Meridian's proposal than the EA is. One reason for this may be the difference between the roles of the SO and the EA.

12. The roles of the SO are set out in section 8 of the Act, and Part 7 of the Electricity Industry Participation Code 2010 (the Code). The System Operator role most relevant to this submission relates to forecasting security of supply and managing security of supply emergencies.

13. In summary, the EA is focused on competition, and on the efficiency and reliability of the system as a whole. The EA's role covers reliability at a system-wide level and also in relation to key policy issues, like dry year risk and contingent storage settings. The SO is more focused on forecasting security of supply and managing supply emergencies.

Energy in the electricity market

14. Electricity supply must meet electricity demand at all times to keep the power system operational. This means generation must respond to changes in demand.

15. Demand varies significantly over time. It is higher in winter than in summer. It is higher during the day than the nighttime. It is higher for a few hours in the morning and the evening than at other times of the day.

16. This makes energy storage an important component of security of supply; it allows generation of electricity when it is most valued. In general, the amount of energy we have available in the system is measured by how much fuel we have available to meet demand. The more fuel that is accessible at any point, the more secure the power system is.

17. Hydro reservoirs are one way the electricity system stores energy. The six major controllable hydro lakes (in order of size: Pūkaki , Tekapo, Taupo, Te Anau, Manapouri and Hawea) are some of New Zealand's most important energy storage assets. Hydro generation accounts for about 60 per cent of our total annual generation.

18. New Zealand has a relatively small amount of energy storage relative to total demand compared with other countries. Lake Pūkaki , the largest hydro storage asset, holds energy when it is full of up to 2,400 GWh. This is equivalent to about five per cent of New Zealand's annual electricity consumption, of around 40,000 GWh.

19. Our starting point is that increasing the availability of contingent storage in Lake Pūkaki is likely to lower the cost of system security, because it would increase the amount of useable fuel in the system and allow trade-offs to be made between different contingent arrangements.

The cost of electricity generation

20. The electricity spot market determines what combination of generators and fuels is used to generate electricity. The spot market is designed to ensure the system can meet electricity demand at the lowest possible cost at any time. Prices vary every half hour taking into account the level of demand and the cost of generation, but also the costs of transport, constraints in the transmission grid that limit how electricity can move around the country, and the need for generation reserves in case there is an unexpected failure somewhere in the system.

21. In simple terms, the spot market ensures that the lowest cost fuel is used first. When fuel is abundant, ie, lakes are full, it is windy and sunny, and demand is low, spot prices will be very low. When fuel is less abundant and demand is higher, spot prices will increase, reflecting that relative scarcity.

22. For example, in late 2025 and early 2026 when hydro storage was abundant, hydro generation was being offered at very low cost, and we saw very high levels of hydro generation and almost no thermal generation. Conversely, during the winter of 2025 hydro storage was low, meaning more expensive hydro generation, and consequently we saw much higher thermal generation and higher spot prices.

23. Water itself has no direct cost but the possibility of storage means that it has an opportunity cost. When hydro generators with storage decide on their offer prices—the prices at which they are willing to sell electricity in the market, they face a choice between generating now or saving the water for later. If they generate now, then they forgo the opportunity to store the water and use it later when prices may be higher.

24. The opportunity cost of water is lower when hydro storage is abundant. There is less value in storing more because there is already a lot in storage. The risk for generators is that water will be spilled instead of being used in generation and sold in the market. So when hydro storage is abundant, the opportunity cost is low, the offer price for generation from hydro assets with storage is also low, and more water is used to generate electricity.

25. How much fuel can be stored and how easily the supply can be replenished impacts the opportunity cost and how fuel use changes over time. For example, since hydro inflows are typically higher in spring with the addition of snowmelt, hydro storage is often used more freely leading into spring. Conversely, at this time of year, spot prices can be higher as hydro generators with storage try to conserve water to meet the coming winter demand.

26. As set out above, the modelling by Meridian and the SO shows that increasing the availability of contingent storage at Lake Pūkaki would lower the opportunity cost of water and reduce the system cost, as less coal would be burned.

Contingent resources

27. In the electricity system, some fuel and generation is contracted for on a contingent basis; its use is only triggered when the party paying for it expects it to be needed. One example is the Huntly Firming Obligations (HFO), which allow other participants to direct Genesis to generate electricity from coal stored at Huntly in return for payment contingent on the participant having already paid for the coal, and Genesis having generation capacity available. Another example is the contracts we have seen in recent years under which generators purchase gas from Methanex in the winter when its value converted into electricity is high, and return it to Methanex in the summer when the converse is true.

28. Commercial demand response agreements, eg, Meridian's agreement with the Tiwai aluminium smelter, also work like these contingent contracts. When viewed in terms of energy, an option to have a customer reduce their consumption is the same as an option to increase generation.

29. The order that contingent resources are used in is usually determined by the commercial incentives of participants. For example, Meridian may make the decision to direct the Tiwai smelter to reduce its output or to exercise an HFO option it may have purchased. Meridian

may be incentivised to do this at a time when hydro storage is low so that they can conserve water for the future.

30. Lake Pūkaki 's current contingent storage is different from contractual contingent resources: commercial incentives do not determine when it is used. The effect of the current arrangements is that contingent hydro storage at Pūkaki is used after all other contingent resources, as if it is more highly valued than these other resources. Meridian and SO modelling shows that it is effectively valued so highly it is extremely unlikely to ever be used.

31. Suspending the current arrangements for access to Pūkaki contingent storage would mean that it would be treated in the same way as other contingent resources for the next three years, ie commercial incentives would determine the value of fuel and the order in which it is used.

32. Both Meridian and SO modelling show that suspending the current arrangements for access to Pūkaki contingent storage means that some of the water will be used more often, although still very seldom. Suspension would give Meridian another option for fuel management in addition to those it already has.

Meridian's application is to suspend the current contingent storage arrangement

33. In summary, our view is that the proposal to suspend the current arrangements for the next three years is likely to have a small positive impact on competition, efficiency and reliability.

34. On competition, the proposal will mean that the value of the Pūkaki contingent storage will be determined by commercial incentives. This in turn should mean Pūkaki contingent storage competes with other contingent resources, potentially reducing costs for consumers in the long run by ensuring that the least expensive fuel options are used first.

35. The proposal should also improve economic efficiency. This is because, with the contingent storage requirements in place, higher opportunity cost resources can be used before the Pūkaki contingent storage. In 2024, both the Tiwai aluminium smelter and Methanex shut down or reduced production to benefit the power system. This had an impact on the economy as industrial output was reduced. The trigger for access to contingent storage had not been met, and so Pūkaki contingent storage was not available before those arrangements were made. This could have been an inefficient outcome, ie, New Zealand might have been better off had these large industrial plants continued to operate and Pūkaki contingent storage had been used for energy instead.

36. On reliability, as noted above, our view is that making more fuel accessible by the system increases system reliability in general. As well, there are reasons to think that hydro generation is more reliable than thermal generation in this specific case. Thermal generators — necessary to convert coal to electricity — can be expected to get less reliable as they get older. In addition, they are single large units. By contrast, hydro stations tend to be made up of multiple smaller units. This means outages of thermal generators remove more capacity from the system and have a greater impact than outages of hydro generators.

37. There are four 66MW generators at Ōhau A, the first station downstream of Lake Pūkaki, and four 53MW generators at each of Ōhau B and Ōhau C. Further downstream Benmore has six 93MW generators. By contrast there are three dual fuel generators at Huntly that can run on

coal or gas, each 240MW, and a single 400MW gas generator, New Zealand's largest single generation unit.

38. The current arrangements effectively impose a preference to use this thermal plant first, and save lower risk contingent hydro generation plant to be used last.

39. More generally, generators that face commercial incentives are well placed to manage their own risks. Generators have obligations to supply their retail customers and other contractual arrangements they must meet. It is in their best interest to minimise disruptions to supply, both in the near term and in the future. Insulating contingent storage from these incentives reduces the ability of generators to manage these risks efficiently.

40. SO modelling shows that for an extreme scenario where hydro inflows are very low and a major thermal plant is unavailable, the current arrangements work better because less reduction in demand is required, through arrangements like the contract with the Tiwai smelter. Part of the reason for this is that higher spot prices mean that coal is dispatched earlier and water is used more conservatively. This in turn means that the level of Pūkaki doesn't fall as far.

41. In our view, this modelling result is plausible as a description of what result the spot market would deliver in this extreme situation. But the scenario itself is very unlikely.

Implications for other decisions

42. The contingent storage arrangements are not a centrally designed strategic reserve; instead they have evolved over time in a way that hasn't been coordinated or designed to minimise total costs. We do not know whether a market-based strategic reserve would be cheaper for consumers or more effective than the current arrangement for access to contingent storage in Lake Pūkaki. But we do think that the proposal will move the overall system to a lower cost position.

43. We note that this application is being considered while other work aimed at alleviating the risk the system faces from low hydro inflows is being advanced. This includes the Government's proposal to build an LNG import facility, and policy work on a dry year regulatory framework being done by the Ministry of Business Innovation and Employment. The Authority is also considering some policy work this year on whether there are changes to the wholesale market that might improve the ability of participants to contract for dry-year risk management.

44. The terms of the resource consent for the use of Lake Pūkaki connect access to contingent storage with processes set out in the Security of Supply Forecasting and Information Policy (SOSFIP). SOSFIP is a document developed by the SO and approved by the EA. The last review of SOSFIP was completed in early 2026.

45. If Meridian is successful in its application, we will need to consider what implications that has for the SOSFIP and whether another review of its provisions is necessary. We signalled the potential for such a review in the SOSFIP decision we published recently.

Thank you for your comments