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Australian Energy Market Commission
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Sydney NSW 2000
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Efficient provision of Inertia Directions Paper

Snowy Hydro Limited welcomes the opportunity to comment on matters raised in the Efficient provision of Inertia Directions Paper by the Australian Energy Market Commission (the Commission).

Inertia is essential for system stability and the NEM's system security is supported by inertia provided naturally by synchronous generators. As these generators retire, the NEM faces a steady decline in inertia, raising challenges for maintaining a secure and stable system operation, and placing more reliance and costs, through wear and tear, on Snowy Hydro's assets.

It is for this reason an inertia market is an immediate critical reform to deliver ongoing security and reliability of supply. The inertia market will provide the revenue stream for generators capable of supplying inertia required to ensure that the NEM delivers ongoing security and reliability of supply. If a spot market is not considered, then the Commission should seek a solution that pays a fair price to new and existing inertia providers to provide this service.

Snowy Hydro welcomes the Commission engaging Houston Kemp to develop a two-stage economic test to evaluate operational procurement options. This was requested by numerous stakeholders in the previous consultation and assists in the discussion regarding the need to value inertia.

The Directions Paper sensibly focuses on assessing the economic case for operational procurement and the need for further technical analysis to address unresolved questions about implementation and feasibility. A lack of specific options for new system security services is putting the energy transition and system security at risk. Although any reform would take time, the expected closure of coal power stations needs new investment in inertia. Instead further delays in valuing inertia will lead to big intervention costs and at worst Australian Energy Market Operator (AEMO) unable to operate the grid.

Moving forward there will be uncertain coal retirement timings while periods of low and negative spot prices when their inertia is most likely to be valued, there will be little incentive for synchronous generators to remain operational. This would then necessitate reliance on more expensive inertia services or directions to maintain grid security. The long term solution of moving back to directions should be avoided.

There is a need for further technical work to be undertaken by AEMO to better understand the long-term needs of the power system and inform the development of an updated approach for inertia. While the AEMO Transition Plan System Security report is an important step there needs to be stronger National Electricity Rules (NER) planning obligations on AEMO. This would help AEMO allocate resources to the right areas and make significant progress towards the NEM having a plan to provide inertia.

The Commission considers numerous operational procurement models with the standalone inertia spot market. Snowy Hydro believes ongoing technical research needs to continue on an inertia spot market and analysis should be undertaken to ensure that the needs of the power system are provided to support a secure system. We understand the difficulty in integrating an inertia price within the energy market price, however we believe further assessment can be undertaken in an inertia spot market like the Frequency Control Ancillary Services (FCAS) market, where generators and synchronous condensers are co-optimised. We support the Australian Energy Council (AEC) proposed design which follows the form of other ancillary service spot markets in the NEM, particularly FCAS markets

If market mechanisms are not adopted then the right investment will not be in place in the future for the NEM. A just in time approach to creating markets is not realistic and should not be pursued. Similarly, AEMO should not simply assume that the existing stock of generation assets will be able to deliver adequate inertia without the creation of appropriate market-based incentives. It is for this reason Snowy Hydro is concerned by the alternative options put forward by the Commission.

HoustonKemp independently estimated the net present value of establishing a standalone spot market at \$20 million to \$50 million over ten years. Although the net present value has been assessed there has been a heavy reliance on the costs of implementing the spot market and not the benefits associated with the market. We understand costs could be high to implement however the amount of innovation that could be promoted from such a market and the avoidance of reliability risks on the market is a benefit that could far outweigh the costs in the long term. A narrow approach should not be taken on this approach as it's clear the fast-frequency response market, which would have also been costly to implement, has succeeded since commencing operation.

The very fast FCAS markets commenced operation in 2023. Participation has increased in this market and it is doing exactly what it was expected to do, encouraging more participants to provide this frequency. The contingency raise of 1-second (R1SE) enablement averaged 277 MW over the quarter, while availability averaged 654 MW (Figure 82 from the AEMO QED¹). For the contingency lower 1-second (L1SE) service, enablement averaged 27 MW, with availability averaging 513 MW (Figure 83 from the AEMO QED²). There are also several providers such as the Victorian Big Battery, Hazelwood Battery Energy Storage System and Riverina.

Figure 82 R1SE enabled closer to the cap
Average R1SE cap, enablement, actual availability, and price

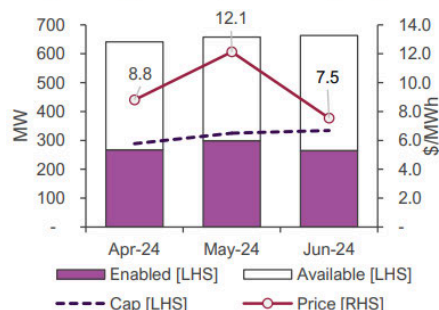
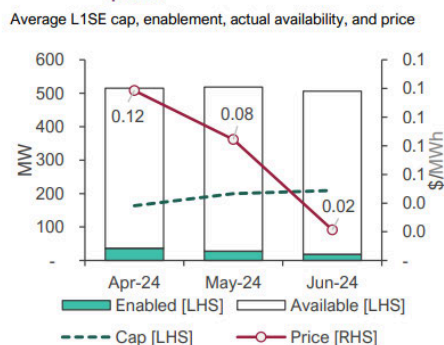


Figure 83 L1SE price remained low throughout the quarter
Average L1SE cap, enablement, actual availability, and price



¹ AEMO Quarterly Energy Dynamics, Q2 2024

"<https://aemo.com.au/-/media/files/major-publications/qed/2024/qed-q2-2024.pdf?la=en>"

² AEMO Quarterly Energy Dynamics, Q2 2024

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The example of the fast frequency response market is related to a competitive market for inertia which would also increase participation, therefore increase investment, and overtime become a dynamic market.

If the high cost of forming a market is being considered then it should also be compared to the high cost in the 36 synchronous condensers the Directions Paper refers to that will be built and will contribute to minimum inertia. This approach represents a resiliency and efficiency risk to the NEM as it stifles innovation, locks in expensive resources and ignores supply chain realities. Hydro plants may have the capability to run in synchronous condenser mode if incentives are there, an option not considered in the Directions Paper, instead the only option offered is to invest in the full suite of synchronous condensers upfront.

The HoustonKemp work excluded the opportunity costs for the earlier/prolonged dispatch of existing synchronised generation which is material and will affect the cost of inertia provision while the costs to delay shutdown of existing synch generation are assumed to be static but would increase over time (and this will have a capability limit). In addition HoustonKemp has assumed that all existing synchronous capacity is readily available over the cycle not considering that there's going to be outages (short, long, or permanent) that we need to plan for, and therefore not including such factors reducing any reliability benefits from a well functioning market.

The Commission's preference is the least-worst options of long-term procurement. This approach is disappointing because innovation is not considered appropriately which is critical given we are considering a long term horizon and where best incentives lie. Given the importance of innovation in system services, being able to deliver the services through a range of technologies suggests spot market and not long-term contracts need to have greater consideration of the optionality and consideration of the value of markets and overall costs to consumers.

Long-term contracts can be less transparent in terms of investment signals due to their bilateral nature and limited disclosure, which would likely reduce the incentive for service providers to explore new innovative and more cost-effective technologies to supply inertia.

HoustonKemp identified potential benefits from using operational procurement to address shortfalls in minimum inertia in real-time, noting that the approach could supplement long-term contracts, providing a cost-effective alternative to directing synchronous generators online to meet minimum. While long-term contracts could be important in the short term, to give confidence to AEMO and the market, it is not the more efficient solution. The Commission needs to show that these contracts should value these services for what they are worth and what they cost to update and maintain, not assume that this service is free and therefore does not need to be appropriately valued. For example, AEMO should understand what the risk looks like for existing pumped hydro plants, such as wear and tear, should inertia continue to decline and what the NEM would look like without inertia through different scenarios.


Should long term procurement be undertaken, we agree that the required level of inertia for procurement be set by AEMO and the approach taken to procure these services is taken competitively from the energy market.

Regardless of the procurement framework developed, Snowy Hydro considers there is a need for AEMO to develop a robust methodology for determining the minimum level of inertia dynamically with oversight from the Reliability Panel.

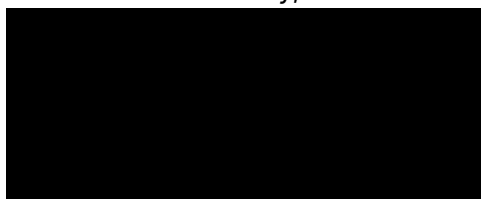
Timing and staging are important considerations for implementation. The Commission notes that many benefits from operational procurement are projected to materialise in later years, when uncertainties around synchronous condenser deployment and grid-forming inverter uptake are expected to decline. It is for this reason that implementation of any valuation of inertia be undertaken now rather than left too late. The next consultation must refine the implementation details, whichever mechanism is chosen, so as this is not delayed further and reliability risks become a concern.

About Snowy Hydro

Snowy Hydro Limited is a producer, supplier, trader and retailer of energy in the National Electricity Market ('NEM') and a leading provider of risk management financial hedge contracts. We are an integrated energy company with more than 5,500 megawatts (MW) of generating capacity. We are one of Australia's largest renewable generators, the third largest generator by capacity and the fourth largest retailer in the NEM through our award-winning retail energy companies - Red Energy and Lumo Energy.

Snowy Hydro appreciates the opportunity to respond to the Commissions Efficient provision of inertia, Directions Paper. Any questions about this submission should be addressed to 

Yours sincerely,



Panos Priftakis
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