

7 August 2025

Australian Energy Market Commission
Level 15, 60 Castlereagh Street
Sydney NSW 2000

Submitted electronically

Efficient provision of Inertia Draft Rule determination

Snowy Hydro welcomes the opportunity to comment on the Australian Energy Market Commission (Commission) Efficient provision of Inertia Draft Rule determination.

Snowy Hydro does not support the decision to not make a draft rule in response to the Australian Energy Council (AEC)'s proposal to introduce a spot market for inertia that would price, bid, and dispatch inertia as a distinct service in real time. The proposed solutions to improve the existing frameworks put forward by the Commission do not go far enough and risk undermining the reliability of the National Electricity Market (NEM).

There are currently no explicit market signals to encourage and uplift the capability of new technologies to provide system services. As thermal generation retires, the need, frequency and breadth for security service providers will increase. If market mechanisms are not adopted then the right investment will not occur. A just-in-time approach to creating markets is not realistic. Similarly, the Australian Energy Market Operator (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 that Snowy Hydro is concerned with the Commission's alternative approach.

The Commission's proposed solutions do not adequately address that owners of synchronous assets incur substantial costs, both fixed and variable, in supplying inertia. Since the units which provide synchronous capability are also used to supply energy, it is reasonable to attribute the fixed capital costs of the units to both activities. It is therefore important that a single, non-discriminatory market clearing price is the only sustainable, efficient and effective solution to incentivise an efficient level of inertia and maintain system reliability.

If the right incentives are not put in place there is a risk there will not be enough replacement synchronous options delivered when thermal generation retires. The consequence of that is that AEMO will need to intervene and make directions to existing generators, to make sure the grid is safe and secure¹. This could result in a costlier outcome.

Inertia will be a problem

AEMO's 2025 Draft General Power System Risk Review Report² highlights that as the NEM operating conditions continue to change there will be a decline in system inertia. The AEMO paper notes that if synchronous generation is displaced by services that cannot provide inertia, the power system may see larger frequency deviations after power system incidents. Deviations such as this can exceed design limits and can result in unexpected operation of other plant and contribute to cascading failures.

AEMO notes "a total of four synchronous condensers will also be integrated as a component of PEC's delivery, which further supports network stability due to their inertial and system

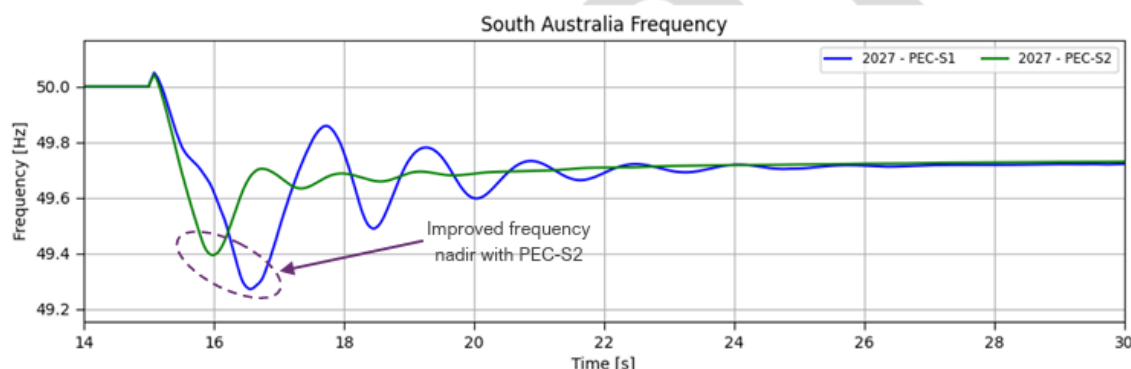
¹<https://aemo.com.au/newsroom/speeches-and-presentations/aemo-ceo-speech-at-2025-australian-clean-energy-summit>

² AEMO's 2025 Draft General Power System Risk Review Report

<https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/general-power-system-risk-review>

strength contributions.”³ The figure below illustrates this performance improvement due to the integration of PEC-S2, relative to PEC-S1 for 2027 operating scenarios, shown via green and blue frequency traces respectively. While new synchronous condensers will be critical, if they are delayed the NEM will not have the incentives required to fill the gap left by thermal generation coming offline.

Figure 6 PEC-S2 improves South Australia's frequency response to NEM events



Market economic benefit compared to the proposed Commission approach

The high cost of forming a market has been raised by the Commission as a reason not to adopt an inertia market. This should however be compared to the high cost of implementing over 20 new synchronous condensers, costing in excess billions of dollars, 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.

Material Net Benefits not addressed

The Commission confirms that an inertia market has merit in-principle and could achieve benefits for consumers but concludes that there is unlikely to be “material net benefits”⁴ in the near term. In reaching this decision, the Commission relied on modelling commissioned from Houston Kemp.

Snowy Hydro has concerns with the approach taken by Houston Kemp. They state that “The need for revenue certainty to support investment in technologies to provide incremental inertia services differs materially from that required for minimum inertia.” The assumption behind this statement is that inertia from existing synchronised generation can continue to be provided for free, while only new or additional sources, or provision of, inertia are compensated. In essence, they endorse a compensation framework that discriminates in its payment to each technology type based on underlying cost structure.

Thus, the incremental cost of providing inertia from traditional synchronised generation is deemed to be nil (and assumed to be compensable at that rate), while it is acknowledged that new synchronous condensers must be compensated for their full fixed and variable costs, at an

³ AEMO's 2025 Draft General Power System Risk Review Report
<https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/general-power-system-risk-review>

⁴ It is unclear why the Commission has added the qualifier “material”. A determination of a positive net benefit should itself be sufficient to justify the reform. The requirement for those net benefits to also be “material” is vague and an unnecessary barrier to moving towards a market-based system.

average fixed cost of \$7,567 per unit (\$/MWs/year). Even though both types of technology provide the same service, they are presumed to be compensated (and able to be compensated) vastly different amounts. It is this very approach - a lack of a clear, consistent price signal - which is responsible for the looming undersupply of system strength.

Attempting to assemble a framework which relies on TNSPs' ability to price discriminate based on estimates of underlying costs, procured through bilateral contracts, rather than creating a single market clearing price, is inefficient and will be ineffective in the long term. It is unfair, lacks transparency and is inconsistent with how energy markets (and indeed all commodity markets) operate in practice, which is based on the cost of marginal supply. It provides no incentive for existing generators to maintain their assets or synchronous condenser capability. It is the ability to earn margins which funds investments.

The cost of inertia from Synchronous generation

Snowy Hydro and other owners of synchronous assets incur substantial costs, both fixed and variable, in supplying inertia. The fixed costs of maintaining a hydro power station are large. Since the units which provide synchronous capability are also used to supply energy, it is reasonable to attribute the fixed capital costs of the units to both activities.

There are substantial variable costs associated with the provision of syncon services, including, in particular, dewatering costs, to allow a unit to run in synchronous condenser mode. Operating in synchronous condenser mode increases stress on bearings and excitation systems. Frequent operation in this mode accelerates compressor maintenance costs and the need to replace the compressors in the near time, reducing the time between overhauls.

Accelerated maintenance creates energy market opportunity costs. Snowy Hydro forward sells price insurance (hedges). Additional maintenance-related outages reduce the ability to defend contract positions. In a system dominated by variable renewable energy, it cannot be assumed that inertia needs will correlate with current supply/demand dynamics. Synchronous generators will increasingly be required to supply inertia outside of the times needed to defend contract positions, increasing these risks.

However, regardless of whether or not generators incur such costs, this should not preclude them from being compensated a fair market price for provision of inertia. A single, non-discriminatory market clearing price is the only sustainable, efficient and effective solution to incentivise an efficient level of inertia and maintain system reliability.

The Draft decision will not resolve the undersupply of inertia

Overall, the Commission's draft decision would perpetuate current arrangements whereby existing generators are not paid for inertia. While this wasn't an issue when there was surplus, the more coal capacity that retires close, the more valuable will be the inertia provided by remaining generators. The Commission's own consultancy notes *"as coal and gas plants retire from the NEM, the provision of synchronous inertia as a byproduct of synchronous generation will decline significantly, absent any intervention. However, this decrease corresponds with a period of expected investments to meet system strength obligations, primarily by TNSPs, which can be adapted to also provide inertia at a low incremental fixed cost"*⁵. There is no acknowledgment from Houston Kemp of the need to support existing generators to invest in inertia.

The Commission's assumption that the provision of inertia from existing generators, in generation mode, has zero incremental cost and therefore should not be compensated is incorrect. Fundamentally, if inertia has a value, its provision should be rewarded.

⁵ A report for the Australian Energy Market Commission, 2024, *"Evaluating market designs for inertia services"*

The Commission's draft decision, if adopted, will leave unresolved the need for an explicit market signal to encourage and uplift the capability of new technologies to provide system services. As thermal generation retires from the system, the need, frequency and breadth for security service providers will increase.

More work needed by the Commission moving forward

If an inertia market is not adopted then the Commission should address and consider the following suggested changes and improvements:

- The Commission should seek an alternative solution that pays a fair price to new and existing inertia providers, based on the cost of marginal supply. The proposed contracting approach does not achieve this.
- The proposals by the Commission reinforce the central role accorded to TNSPs in the procurement of system strength, through use of TNSP contracting rather than a market-based approach. This creates the risk of adverse outcomes.
 - It relies on the Regulatory Investment Test for Transmission (RIT-T), which tends to favour network options over non-network options.
 - It strengthens TNSPs' incentives to meet system strength requirements through additions to regulated asset bases, in the form of new synchronous condensers, which can increase costs for consumers.
 - It places TNSPs in the privileged and somewhat conflicted position of having access to, and ultimately making recommendations between, third party system strength offerings and their own direct investments in network assets.
 - These outcomes could be avoided through the creation of a market to procure system strength, rather than reliance on TNSP-led contracting.
- The Commission should work closely with the Energy Panel Market Design Review.
- 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 main focus of the paper is around using the existing mechanisms of long-term contracting by TNSPs and AEMO to enter into contracts to top-up inertia provided by existing generators. While attempting to address concerns by participants around these contracting arrangements there is no explanation of how these methods will change.

Governance for Essential System Services (ESS) - More needs to be done

As noted throughout the submission, separate markets for Essential System Services (ESS), unbundled from the energy market, are the most efficient and transparent form of providing and procuring ESS. Markets are the most economic, transparent, and efficient means to value, procure, and deliver ESS. If the Commission is seeking to undertake *"ongoing monitoring to assess when an inertia market may be needed"* the right frameworks and rules need to be put in place early on.

To achieve these markets in the long term the Commission needs to establish an ESS Governance Framework in the NEM, and have this framework included in the Rules through a Rule change process. The changes the Commission should seek to address must have clear

deliverables, with specific timeframes, that can be implemented through the existing responsibilities and obligations of the Reliability Panel.

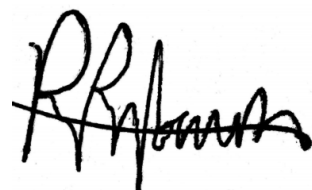
Reforms need to be sufficiently specific to ensure accountability for meeting market development milestones and timeframes in preparation for commencement markets in the long term. To help ensure milestones and timeframes are met, additional functions and powers should be conferred on the Reliability Panel to act as a point of accountability for AEMO as they develop and implement ESS markets. Taking these steps will help ensure appropriate signals for investment are implemented.

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 Commission's Australian Energy Market Commission (Commission) Efficient provision of Inertia Draft Rule determination. Any questions about this submission should be addressed to panos.priftakis@snowyhydro.com.au.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'P. Priftakis', with a stylized flourish at the end.

Panos Priftakis
Head of Wholesale Regulation
Snowy Hydro