

Ms Victoria Mollard
EGM, Economics and System Security
Australian Energy Markets Commission

7 August 2025

Dear Ms Mollard,

ERC0339 - Efficient provision of inertia

The Australian Energy Council (AEC) is the peak industry body for electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. AEC members generate and sell energy to over 10 million homes and businesses and are major investors in renewable energy generation. The AEC supports reaching net zero by 2050 and a 55 per cent emissions reduction target by 2035 and is committed to delivering the energy transition for the benefit of consumers.

The AEC welcomes the opportunity to submit to the AEMC's Draft Determination in response to the AEC proposed rule change on the efficient provision of inertia. We do not support the Draft Determination, and do not believe it supports the National Electricity Objective (NEO) for a few key reasons:

- It effectively embeds a network only approach to the provision of Essential System Security (ESS) services, exposing consumers to higher costs and late delivery of network solutions.
- It does nothing to create market signals for non-network options, meaning existing non-network solutions are not treated on a level playing field basis, and new non-network solutions have neither the ability nor incentive to invest.
- It does nothing to place a positive obligation on AEMO to foster a market-based approach or do the work necessary to progress the underlying work required to move towards an efficient provision of inertia.

The Improving Security Frameworks (ISF) Rule put in place a Transitional Services Framework (the transitional framework) to provide an interim solution until a more enduring arrangement can be found. In its current form, the transitional framework does not provide any path to a more enduring system security service, and it leaves the implementation of the transitional framework to AEMO with limited transparency, stakeholder consultation, and accountability for outcomes.

We would prefer that the Improving Security Frameworks (ISF) was enhanced now to establish the technical capability and frameworks required for the development of an inertia market.

Deciding not to establish a market will stifle innovation, and likely lead to higher costs for consumers

Without an inertia market providing market signals to non-network options, they are unlikely to be viable, embedding a network option only approach. This lock-in of network technologies that may become less efficient or obsolete over time will stifle innovation. This is because there is no incentive to explore more novel and cost-effective non-network solutions. Such an outcome is inconsistent with the NEO to promote the efficient investment in and operation of electricity services in the long-term interests of consumers.

A market mechanism encourages the participation of the widest range of assets, and allows for an efficient price discovery process. The lack of a market signal essentially entrenches a network-based solution as the only economically viable approach, and acts as an inhibitor to any non-network based innovation. This is especially the case as multi use assets by definition involve opportunity costs (use them for inertia and wholesale market revenues are lower than they would otherwise be). Single use network assets are essentially sunk costs, with a pre-defined revenue flowing independent of the intensity of asset utilisation. The network asset owner is entirely indifferent to the efficient utilisation of its network asset - what matters is it gets included in the Regulated Asset Base. This gives rise to the risk of over procurement.

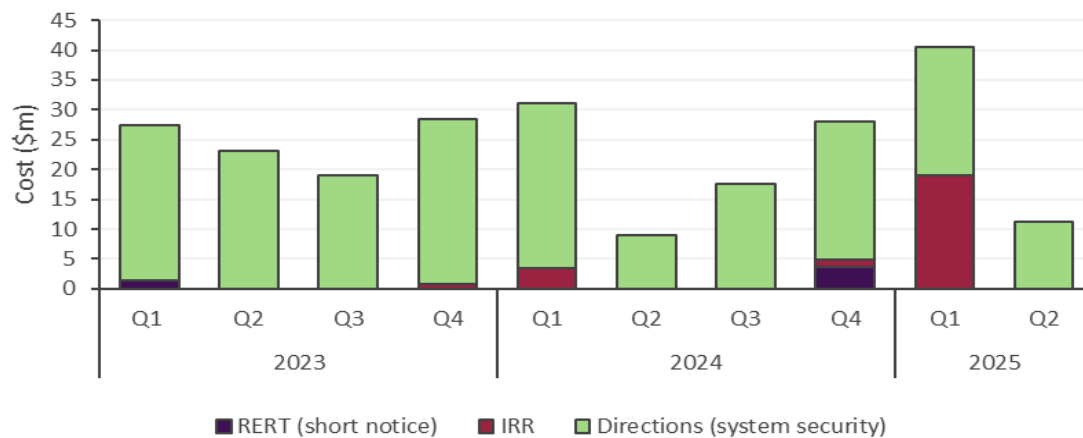
In the absence of a network solution being ready in time, AEMO will need to rely on Directions, at greater cost to consumers. Daniel Westerman recently spoke at the Clean Energy Summit, noting:

“But until enough of these replacement synchronous options are delivered, our control room operators will need to intervene and make directions to existing generators, to make sure our grid is safe and secure.” ¹

AEMO’s recently released Quarterly Energy Dynamics report included a chart showing the cost of directions, as outlined in Figure 1. Note that directions for system security have averaged 21 per quarter since Q1 2023.

¹ [AEMO | AEMO CEO speech at 2025 Australian Clean Energy Summit](#)

Figure 1: System security directions costs



A network only approach to ESS exposes consumers to the risk of late delivery and higher costs

Under the ISF, the AEMC expects that inertia requirements will be predominantly met by new synchronous condensers with flywheels attached or grid-forming plants commissioned by TNSPs to fulfill their system strength obligations, and that this will need to be in place before large synchronous plants can retire. To the extent TNSPs do not deliver the synchronous condensers on time, existing thermal plant will not be able to retire in the anticipated timeframe. This delayed transition would be more costly, and Australia's achievement of its emissions reduction goals impacted.

The late delivery of network assets is a well-documented and ongoing issue. TNSPs have struggled to overcome supply chain challenges, social licence issues and have also cited financeability issues. Financeability issues cited by TNSPs often seem to require either Government underwriting via concessional loans or other mechanisms, which seem to be bespoke for each project, and involve drawn out negotiations with both jurisdictional and Commonwealth Governments.² TNSPs typically will not proceed while negotiating these bespoke agreements, and face no financial consequences for late delivery of network-based solutions.³

² <https://www.afr.com/companies/energy/transgrid-seeks-government-support-for-vital-700m-grid-investment-20250314-p5ljly>

³ Typically a TNSP would manage the risk of later delivery of network solutions through procuring non network solutions to support its system security obligations under the ISF.

The cost of TNSP synchronous condensers will be considerable. Transgrid observed in its recent PACR that:

“the estimated costs for synchronous condensers have increased by approximately 90% following further supplier engagement and additional studies of the sites. The increase is a response to rising global demand for synchronous condensers in a supply-constrained market (and associated civil and balance of plant works)..... The average cost assumed in the PACR of a selected network synchronous condenser is \$160 million including balance of plant and commissioning.”⁴

Transgrid’s PACR identifies a range of ESS portfolios, each with different delivery timeframes and mixture of network and non-network solutions. In the PACR, Transgrid focusses on the cost of delay. It compares Portfolio 2 with the first credible date for synchronous condensers assumed to be March 2029, with Portfolio 3, with the first credible date set at February 2030 (i.e. less than a year later). The net market benefit analysis highlights the risk of late procurement – it estimates a \$2.2 billion decrease in net market benefits when Transgrid’s synchronous condenser procurement is delayed from March 2029 to February 2030 (portfolio option 2 compared to 3).

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.

⁴ <https://www.transgrid.com.au/media/kzqd14sn/2507-transgrid-pacr-meeting-system-strength-requirements-in-nsw.pdf>

These outcomes could be avoided through the creation of a market to procure system strength, rather than reliance on TNSP-led contracting.

Concerns with analysis in Draft Determination

The AEC is concerned that the cost benefit analysis approach taken by the AEMC's consultants does not support a level playing field. Houston Kemp states 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.

Owners of synchronous assets incur substantial costs, both fixed and variable, in supplying inertia. The fixed costs of maintaining a 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.

The Draft Determination says now is not the time to establish a market, but provides little substantive detail on what would need to change for a market to be worthwhile

One of the most problematic aspects of the Draft Determination is the Commission's insistence that the net benefits of an inertia spot market are not positive "at this time". The obvious rejoinder is "if not now, when?". This is particularly the case when only recently the AEMC Reliability Panel wrote to AEMO in relation to system strength, and observed:

"the risks of over and under investment are asymmetric. The risk of over-investment in security services, or investment earlier than is needed, comes with much lower costs than under-investment or investment that is too late. Under-investment could lead to periods where the NEM cannot be securely operated." ⁵

⁵ AEMC Reliability Panel, 23 April 2025, Letter to AEMO: Reliability Panel comments on AEMO's Transition Plan for System Security. https://www.aemc.gov.au/sites/default/files/2025-04/Reliability%20Panel%20comments%20on%20AEMO%27s%202024%20Transition%20Plan%20for%20System%20Security_0.pdf

The AEMC Reliability Panel also observed that:

“The NEM’s transition to a system dominated by VRE is underway and will continue to accelerate.... It is critical that the system can operate within its technical operating envelope as synchronous generators continue to retire.... The Panel is of the view that to keep pace with the energy transition, security needs must be identified earlier so that timely investment can occur.”

While the AEMC Reliability Panel likely had network-based ESS solutions in mind in the letter to AEMO, creating a market-based mechanism which allows for non-network assets to also play their part will work to de-risk the transition, and to manage technological / timeframe challenges.

In addition, the AEMC’s formulation that now is not the time to implement an inertia market is not supported by detailed, quantified measures that the AEMC would need to observe to change its mind and re-make its decision. Nor is it supported by any process or administrative avenue – the AEMC has provided only high-level qualitative factors it would bear in mind if re-making this decision. However, these factors are not actionable. A future market participant would not be likely to repeat the process of proposing a rule change, with the risk that the decision remains unchanged – they would require much more granular guidance.

The AEMC should be more precise in describing what needs to happen for it to reconsider its decision. Additionally, the AEMC is in a position to task the Reliability Panel with the task of monitoring and proposing a rule change should the need arise. This could be part of an expanded and more proactive ESS governance model that the AEC will expand on further below.

The ISF should be enhanced

In the Draft Determination, the AEMC proposed measures to improve the ISF, including by instructing the Reliability Panel to monitor system conditions and encouraging AEMO to increase the visibility of its technical work. These proposals, while an improvement, do not go far enough in addressing systemic gaps and risks in the ISF.

In relation to minimum levels of inertia, while the Reliability Panel indirectly influences inertia requirements through the determination of the Frequency Operating Standard (FOS), it has no oversight to protect against the over-procurement of inertia services which could arise when a network only approach is taken.

Minimum inertia demand fluctuates in real-time according to the nature of contingency events and is likely to vary significantly over time and at different locations due to the NEM's evolving topology with new generation and load. AEMO's projected minimum inertia is likely to be more conservative, which increases the risk of over-procurement. To better manage such a risk and improve the ISF, the methodology for dynamically determining the minimum levels of inertia should be set by the Reliability Panel.

To inform the need for an inertia market, the AEMC intends to ask the Reliability Panel to monitor system conditions, including emerging inertia shortfall, delays in infrastructure roll-out and early retirement of synchronous generators. The AEC supports this as a positive obligation. However, we note that the long lead time for market formulation and capability investment means that, when an emerging inertia shortfall is identified, it is unlikely that a market can be established in time to incentivise non-network options to address this shortfall.

This lead time is not only a function of the technical work required for market creation but also the extended time needed to operationalise assets given supply chain issues such as increased global demand and materials/labour shortages. In other words, if the non-delivery or delay of network solutions eventuate, the lack of a timely market to incentivise alternative investment would necessitate greater reliance on AEMO directing remaining thermal synchronous units, which may not be adequate to address the inertia shortfall and certainly not cost-effective.

A better approach would involve working promptly to establish a market now so that if the network solutions are delayed, there is capability available.

While AEMO can be encouraged to increase the visibility of its technical work through the TPSS, there is a lack of a transparent structured program with an overarching objective, progress monitoring and accountability. Without such a program, it is unlikely that further visibility of AEMO's work would be sufficient, by itself, to support industry confidence and enable system readiness to transition to an inertia market.

AEMO has limited incentive to use the ISF's Type 2 contracts to trial and demonstrate provision of inertia by non-traditional technologies, such as grid-forming inverters. For example, AEMO anticipates

to only enter into only one or two Type 2 contracts per year in an ad-hoc manner.⁶ These Type 2 trials need to be systematic with a clear governance framework to effectively facilitate technical development and market readiness.

To address these lead time and framework issues, AEMO should start developing a systematic technical work program to progress market procurement by leveraging the ISF, especially Type 2 contracts. Accountability for this work program should be enhanced with oversight and progress reporting by the Reliability Panel through terms of reference issued by the AEMC. This would enhance the ISF by improving the focus, transparency, coordination and avoiding duplication of AEMO's different technical workstreams.

Further suggestions on how to enhance the ISF are included in Attachment A.

Governance framework for ESS services under the ISF

The transitional framework provides extensive opportunities but no incentives for AEMO to learn and progress its understanding of new technologies, and new ways of managing the power system security. While AEMO has commenced setting up the transitional framework, its publications and AEC members' discussions with AEMC and AEMO indicate that AEMO may not be intending to utilise many (if any) Type 1 and 2 contracts annually to meet security gaps. Unless the use of Type 2 contracts becomes 'business-as-usual' and regular in the operation of the NEM by the time Type 1 contracts expire in 2029, there is a risk that AEMO will revert to the use of directions, network contracts, and unit configurations to fill the potential gap exposed after 2030.

The transitional framework has the potential to improve AEMO's and market participants' understanding of the technical, operational and market/procurement challenges of the transition. However, the transitional framework is interim and lacks sufficient incentives for AEMO to utilise its new tools, proactively consider advice from the Reliability Panel, and address the long-term system security needs of the power system in a timely manner through the transition and beyond. Additional actions and governance arrangements are needed for the transitional framework to have an effect and to become the vehicle for change in system security arrangements in the NEM.

The broader ISF's governance framework should be enhanced to develop a pathway for establishing enduring market mechanisms beyond the transition for ESS, including for system strength, inertia and

⁶ AEMO, [2024 Transition Plan for System Security](#), Dec 2024.

voltage control services. Specifically, an enhanced governance framework should mandate that AEMO establishes a transparent and systematic work program to trial the technical/economic unbundling of ESS with the aim of facilitating market mechanisms by leveraging the ISF's Type 2 contracts.

Accountability for such a program could be achieved by expanding the remit of the Reliability Panel to include the monitoring, reviewing and critiquing AEMO's progress in the unbundling of ESS. Separate markets for unbundled ESS are the most economic, transparent and efficient means to value, procure and deliver ESS.

Please do not hesitate to contact David Feeney, GM Wholesale and Environment at David.feeney@energycouncil.com.au if you wish to discuss this submission further.

Yours sincerely,



David Feeney

Attachment A: Recommended strengthening of ISF

Some specific recommended ways to strengthen the ISF are included below:

1. The Reliability Panel should have a strategic advisory function and provide written advice to AEMO at every stage/key milestone in the development of the annual Transition Plan for System Security – especially the development of the draft report. This would avoid the risk of AEMO determining the strategic pathway without sufficient oversight, remove any potential biases, recognise innovation and enable competitive delivery.
2. Establish a requirement on AEMO to demonstrate progression by procuring at least one type 2 contract each year with ongoing results/findings periodic published to market and final evaluation report published at the end of the contract term.
3. A requirement in the NER which standardises TNSP non-network assessment methodology, assessment process and public report on TNSP decisions (which enable a clear comparison between network and non-network options).
4. A requirement on the AER to approve standardised contractual terms for non-network options which reflects the same or similar costs and benefits attributed to network options. Any deviation from the standardised contractual terms or additional terms must be approved by the AER – all contract templates must be published.
5. The final determination must clearly articulate how the AEMC will undertake a review of the transitional framework (including the required reviews at year 7 and at year 15) and how it will assess progress (quantitatively and qualitatively).