



INFORMATION

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Efficient provision of inertia

Consultation starts on a proposal to introduce an inertia spot market in the NEM

The AEMC has published a consultation paper asking for stakeholder feedback on the Australian Energy Council's (AEC) rule change request to introduce an inertia spot market in the NEM. The rule change request proposes that this reform would support the energy transition in the context of declining rotational inertia.

Declining system inertia is leading to power system security challenges, as synchronous coal and gas-fired generators retire. Emerging technologies may help meet these challenges, however, further technical work is needed to develop an understanding of the power system's needs and the capability of these technologies.

Stakeholder submissions are due on 31 March 2023 and the Commission is seeking feedback on the issues the AEC has raised, the proposed solution, alternative options, and the assessment criteria for the rule change.

The Commission has extended the timeframe for publishing a draft determination to 29 February 2024, to allow time for additional stakeholder consultation and to work through the technical and policy complexity.

We are seeking feedback on the adequacy of the existing inertia framework

The rule change request raises several issues with the current framework that could become more pronounced as the system transitions and more coal and gas-fired generators retire and are replaced by inverter-based resources (IBR).

Under the current framework, AEMO assesses the volume of inertia required to securely operate each region as an island. Where there is insufficient inertia available for a region to operate securely as an island, and AEMO identifies a risk of islanding for that region, AEMO will declare an inertia shortfall. The region's transmission network service provider (TNSP) is then responsible for providing inertia services to address the shortfall.

In the context of declining system inertia, the AEC considers that the current framework for managing inertia in the NEM is inefficient and not fit for purpose in meeting the long-term power system need. The Commission considers that the key challenges identified in the AEC's rule change request can be summarised as:

- Declining inertia may pose a future threat to power system security. Further technical work is needed to better understand the long-term needs of the power system and inform the development of an updated approach for inertia.
- Inertia is not efficiently procured or allocated in real-time. This is because the existing framework relies on static annual inertia requirements and does not allow co-optimisation of inertia with energy and other system services.
- Clearer investment signals are needed to meet long-term inertia needs. Valuing inertia and providing transparency on inertia needs could incentivise efficient investment and promote innovation.

We are seeking your views on the AEC's inertia spot market proposal and other alternative options

The AEC's rule change request proposes an inertia spot market as a solution to address the problems arising from declining system inertia and potential gaps in the current inertia

framework in meeting the long-term power system needs.

Various alternatives to a spot market approach have been discussed in the AEC's rule change request, the Commission's previous consideration of related matters, and stakeholder feedback on past processes. The consultation paper outlines the following options and invites feedback on these and any alternative solutions that the Commission should consider:

Market-based mechanisms

- The AEC's inertia spot market proposal — A spot market for inertia that is co-optimised with energy and other frequency control services to dispatch the lowest cost mix of resources.
- Ahead or close to real-time market — A market that operates ahead of, but close to, dispatch. Under this option, AEMO could seek and dispatch competitive bids to provide inertia in the lead-up to dispatch. This is similar to the model outlined in the Commission's *operational security mechanism* draft determination.
- Inertia shadow pricing — Value would be assigned to inertia by determining how much money could have been saved if inter-regional inertia constraints were relaxed by a very small amount — the marginal value of inertia. This would then be paid to providers to supply inertia to relieve the constraint.
- Rate of change of frequency (RoCoF) control service market — A variation of an inertia spot market, similar to Western Australia's wholesale electricity market RoCoF control service.

Structured procurement mechanisms

- Adjustments to the existing TNSP procurement framework — to fill any gaps in the current framework's ability to meet the long-term needs of the power system.
- AEMO forward procurement — AEMO could be required to procure inertia to meet system needs through bilateral forward contracts — short-term and/or long-term contracts.

Maintain the current framework

- Maintain the current framework until technical work informs the best approach — Under this approach, the existing inertia framework would be maintained. Other reforms underway could provide learnings to inform further consideration of the most efficient way to meet the frequency needs of the NEM.

Further technical input will be required to assess the way inertia is provided in the NEM

Further work is needed to better understand the technical inertia requirements of the power system through the transition alongside other system services. The findings from further technical work will help to clarify the nature and magnitude of technical problems arising from declining system inertia and assess any potential gaps in the current inertia framework in achieving a secure and efficient operation of the power system. Further, they will also inform our assessment of the suite of feasible options for evolving the inertia provision framework.

Specifically, the AEMC considers that the following questions need to be answered to inform the rule change process:

- defining system inertia needs, including in the NEM during normal operation;
- defining the relationship between inertia from new technologies (for example, synthetic inertia from grid-forming batteries) and rotational inertia; and
- determining interactions with other security services.

AEMO's existing and planned work programs as part of its Engineering Framework would deliver valuable technical findings toward answering the list of questions above. In this process, the AEMC will consider whether any additional technical work is required for this rule change process and if so, work closely with AEMO to explore options to obtain all technical inputs required.

Next Steps

The consultation paper sets out a range of questions for the purpose of seeking stakeholder feedback. These questions relate to the issues the AEC has raised, the

proposed solution, alternative options, and assessment criteria for the rule change.

Submissions to the consultation paper must be lodged **by 31 March 2023**.

The policy and technical aspects of the proposed inertia spot market and alternative options will take time to work through. As such, the Commission intends to undertake additional public consultation, likely in the form of a directions paper. Due to the additional time this will take, we have extended the timeframe for a **draft determination** until **29 February 2024**.

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