



Improving security frameworks for the energy transition

Ensuring security frameworks are fit for purpose as we transition to a low or zero-emissions power system

The Australian Energy Market Commission (Commission) has made a final determination and more preferable rule to proactively address system security issues through the energy transition. The final rule builds on existing tools in the power system to enhance system security procurement frameworks. It addresses system security issues through the transition by reducing the regular and inefficient use of directions, and providing better incentives for participants to invest in providing system security in the longer-term. It also increases transparency on current system security needs and understanding, and how the Australian Energy Market Operator (AEMO) plans to manage system security as we transition to a low or zero-emissions power system.

The Commission has made improvements to existing security frameworks to help AEMO manage power system security

The Commission has made a final determination and a final rule to address system security issues efficiently and proactively through the energy transition.

The final rule is made in response to two rule change requests from Hydro Tasmania and Delta Electricity, which each proposed operational procurement mechanisms to value, procure and schedule essential system services (ESS) to help keep the system secure. The final rule addresses the issues identified in the requests by ensuring that sufficient security services are operationally available and scheduled, so that we can maintain security without necessitating market interventions.

System security is becoming more challenging to manage as we transition. In the future we will likely have sufficient resources and services to provide system security and these will be plentiful as new technologies emerge. However, during the transition, system security may be scarce as synchronous plant retires, and we learn about and test the capabilities of new technology.

The Commission considers that the tools provided in this final rule are the most effective and efficient way to address the immediate and medium-term transitional issues we are facing in managing security. However, although we need to be able to meet the challenges of operating a transitioning system right now, we are still building the knowledge and operational experience to understand the best methods to manage security in the longer-term. As we build this knowledge and the system continues to evolve, further changes to market design may be justified.

In summary, the final rule:

- aligns the existing inertia and system strength frameworks procurement timeframes
- removes the exclusion to procuring inertia network services and system strength in the NSCAS framework
- adjusts TNSP cost recovery procedures for non-network security options to support efficient contracting arrangements and minimise volatility for electricity consumers
- creates a new transitional non-market ancillary services (NMAS) framework for AEMO to procure security services necessary for the energy transition and to trial new sources of security services
- empowers AEMO to enable (or 'schedule') security services with a whole-of-NEM perspective

The rule proactively facilitates the secure transition of the power system by enhancing procurement frameworks to reduce reliance on directions and drive investments in new technologies.

- improves directions transparency
- introduces a new annual reporting requirement on AEMO, known as the 'transition plan for system security' (or transition plan), in which AEMO will report annually on the steps it will take to manage security through the transition.

The Commission has made improvements to the existing inertia and system strength system security frameworks

The Commission has made several improvements to the inertia and NSCAS frameworks to prepare the NEM for a fully decarbonised generation fleet, better support system security, improve economic efficiency and reduce the need for market interventions such as directions.

The existing framework does not include procurement arrangements for the inertia levels required during interconnected operation to manage system rate of change of frequency (RoCoF) and transient stability. This has the potential to result in an unbalanced procurement which would mean some regions of the NEM under-invest while others bear a disproportionate burden of the investment and so cost.

To address this, the final rule introduces a mainland inertia floor (the 'system-wide inertia level') for interconnected operation to promote distributed inertia procurement across the NEM.

The rule aligns inertia and system strength procurement timelines, allows TNSPs to procure synthetic inertia to meet minimum inertia levels, and allows inertia and system strength to be procured through NSCAS to address near-term gaps.

The changes aligning the inertia and system strength procurement timeframes commence on **1 December 2024**. Therefore, the binding procurement obligations for the revised levels (the floor and modified islanding arrangements) commence on **1 December 2027**.

The final rule revises TNSP cost recovery arrangements for non-network system security contracts

The Commission has improved the cost recovery arrangements for TNSP non-network security contracts to promote efficiency and minimise price volatility for customers. These contracts could be system strength services agreements, inertia services agreement or network support agreements for NSCAS.

The final rule introduces an annual process for forecasting and recovery of system security related network support costs incurred by TNSPs. There is also a new optional function for the AER to consider ex-ante whether expenditure under selected, more significant, contracts meets criteria indicating efficient and prudent expenditure.

The AER will continue to review the expenditure against the operational expenditure objectives once incurred to ensure that only efficient costs are passed through to customers.

This change does not affect the recovery of capital expenditure incurred by TNSPs (for example if they procure synchronous condensers or other network solutions for security), or the system strength charge paid by generators and large inverter-based loads that elect to pay the charge instead of self-remediating their system strength impacts.

The changes to TNSP cost recovery commence on **1 December 2024**.

A new transitional services NMAS framework will help keep the system secure through the transition and trial how new technologies can support security in a net-zero future

The Commission has introduced a new NMAS framework for transitional services (the 'transitional services framework'). The framework allows AEMO to procure two new types of NMAS services, with the aim of these services assisting the transition to a secure low or zero-emissions power system.

To achieve this, AEMO can procure two types of 'transitional services':

- **Type 1 contracts** can be procured where security services are not able to be procured through an existing framework, to meet an immediate and critical need of the power system.
- **Type 2 contracts** are to support AEMO in building its understanding and confidence in how it can manage security in a low- or zero-emissions system. AEMO will be able to procure these contracts to trial either new technologies or the new application of existing technologies to manage power system security in a low- or zero-emissions power system.

The costs of these contracts will be recovered from market customers, in line with existing NMAS frameworks including NSCAS.

The transitional services framework will commence on **3 June 2024**. However, AEMO will only be able to procure transitional services after publishing the transitional services guideline (which must be published by **1 December 2024**).

AEMO will be empowered to schedule long-term contracts for security

The final rule makes AEMO responsible for the operational enablement of security contracts that have been procured in the planning timeframe: system strength, inertia, selected NSCAS, and selected transitional service contracts.

Placing enablement responsibility on AEMO aligns with AEMO's overarching responsibility to maintain system security seeking to minimise the reliance on market interventions (such as directions) to maintain system security, allows for the entire pool of contracts NEM-wide to be leveraged to minimise costs for consumers, and leverages its better visibility than TNSPs over real-time security and IBR participation.

Under this approach AEMO will enable contracts to meet real-time system security gaps at least cost for consumers, and provide system strength to support the projected level of IBR online, as intended under the system strength framework.

These arrangements commence on **2 December 2025**, which is when system strength obligations under the new system strength framework commence.

The Commission has made improvements to directions transparency

The reforms to system strength, inertia, NSCAS and the addition of a new transitional services NMAS framework are intended to provide tools to ensure sufficient security services are available to help reduce the number of security directions that are issued by AEMO.

The Commission considers that directions are a last-resort mechanism in AEMO's toolkit, and that the changes described above should help directions return to being used as such a mechanism. However, we recognise that as the system transitions and each region undergoes changes in its generation mix, directions may still be needed at times to manage system security.

As such, the Commission has made improvements to real-time market notices and post-event directions reporting providing more transparency to stakeholders. In summary:

- the final rule codifies AEMO's obligation to publish a market notice when issuing a direction and outlines the details required in market notices
- the Commission has clarified the timing of AEMO directions reporting - AEMO must, within 40 calendar weeks of a direction being revoked or the direction otherwise ending, publish a report that outlines why the direction was needed, among other information, most of which is already required in reporting
- the final rule will also require AEMO to publish a breakdown of the total amount of compensation paid to each directed and affected participant.

These changes will provide stakeholders with a better insight into system security needs and any trends that may be occurring, allowing greater opportunities for networks, generators, and market bodies to identify efficient solutions to alleviate security needs across short and long-term planning.

These arrangements commence on **4 July 2024**.

The transition plan for system security requires AEMO to report on the steps it will take to manage security through the transition to a net zero system.

It will outline how AEMO is planning to meet security needs going forward, and any improvements in the technical understanding of the power system.

The transition plan for system security requires AEMO to outline the steps required to maintain security through the transition

The Commission has introduced a new annual reporting requirement known as the 'transition plan for system security' (transition plan). The transition plan requires AEMO to report on the steps it will take to manage system security through the transition.

It will support industry understanding of how AEMO is planning to meet the security needs of the power system through the transition to a low- or zero-emissions system, and the current technical understanding of system security and work to improve this understanding and specify services.

The transition plan, coupled with type 2 contracts introduced through transitional services framework (discussed above), will together provide AEMO with the necessary tools to manage security in a low or zero-emissions power system and will ensure the industry is well-informed throughout this process.

AEMO must publish the first transition plan for system security by **1 December 2024**.

The Commission considered stakeholder feedback in making its decision

The Commission values the widespread involvement and collaboration of stakeholders throughout this rule change. Stakeholders made immensely valuable contributions that actively shaped the development of the final rule.

Most notably, the rule change took a different direction based on feedback to the 2022 draft determination, leading to the direction now outlined in this final rule. It offers a simpler solution, building on our current arrangements to ensure a more adaptable and efficient approach for maintaining system security in the near term and as we transition to a low or zero-emissions power system.

Further, the Commission still considers that the ultimate goal — if technically feasible and economically justifiable — remains the independent procurement and valuing of security services (or 'unbundling'). We recognise that this could provide investment and scarcity signals for participants to deliver these services at least cost to consumers.

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