

December 2025

# Transition Plan for System Security

**AEMO's Transition Plan for System Security (TPSS) outlines the plan for system security needs of the National Electricity Market (NEM) in the next decade to support Australia's energy transition.**

It consolidates four previous reports into a single plan that identifies emerging security gaps, investment needs, and collaborative actions between network businesses, market participants, governments, and AEMO.

The fundamentals of power system security are enduring, but how they are maintained is already changing in the NEM.

New investments and reforms are needed to maintain system security as the coal-fired generation that has powered Australia for decades retires (or goes offline, potentially years before exit).

Renewable energy, firmed by storage and backed up by gas is the lowest cost pathway to meet consumer needs as well as government energy and emission policies through to 2050, and there are opportunities to co-optimize reliability and security investment.

AEMO's TPSS outlines a guide for the sector through the next phase of the energy transition, focusing on key transition points and collective actions required.

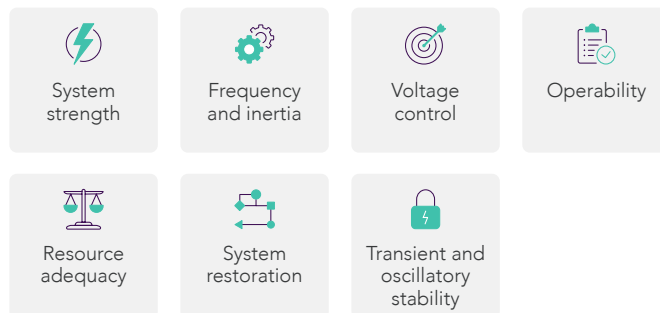
Read the TPSS: [aemo.com.au](https://aemo.com.au)



## Power system security

**A secure power system is one operated safely within defined technical limits, with the ability to withstand credible disturbances and restart following a widespread outage.**

Whereas reliability requires sufficient generation and network capacity to meet customer demand, the requirements for system security are more technical and include:



## There are shared responsibilities for power system security

The *National Electricity Rules* outline responsibilities for network businesses, market participants and AEMO to collectively ensure system security in the NEM through operation of the energy market and planning frameworks.



**Network businesses:** Meet power system security standards. Procure services to meet system needs. Enable security contracts where advised. Provide limits advice to AEMO. Deliver requirements as declared in AEMO's annual system security reports.






**Participants:** Meet relevant standards including for performance, ride-through, and recovery. Provide primary frequency control and control systems. Self-remediate security impacts from projects. Provide services where contracted.



**AEMO:** Operate the power system and energy markets. Annually assess system security shortfalls. Procure transitional services and facilitate trials. Intervene in the market when required to ensure system security.

## Transition planning

Transition planning ensures operational readiness for the future power system through dynamic, ongoing analysis and action. This includes:

-  Understanding how the energy transition affects system security
-  Detailed planning for key transition points ([see page 2](#))
-  Work to improve understanding of what is needed to maintain power system security in a future low- or zero-emissions power system

## Improving understanding of future power system security

### Grid-forming inverters

Grid-forming inverters have advanced capabilities to control their output voltage waveform.

Coupled with batteries, they are already providing key system security services and are actively being tested for capability to provide advanced support.



### Consumer energy resources (CER)


CER (such as rooftop solar, home batteries and electric vehicles) are becoming increasingly central to system operation.

Recent updates to performance standards, minimum system load management, and reforms through the National CER Roadmap are supporting growing participation in an increasingly two-sided system, to benefit all consumers.

## AEMO is procuring transitional services

- To address near-term challenges, and
- To trial new approaches to maintaining power system security.

### Services currently being procured:

-  Managing minimum system load (MSL) events with battery energy storage systems
-  Black start capability from inverter-based resources
-  Zero synchronous generation trial
-  Grid-forming inverter protection-quality fault current
-  System restart under high distributed PV conditions
-  Minimum system load transitional services
-  South Australia grid reference transitional service

See all Transitional Services statements of need: [aemo.com.au](https://aemo.com.au)

# Transition points

Transition points are those events and milestones that require material changes in the operational approach to managing system security.

Key points in the coming 10 years are informed by announced coal retirement dates and the ISP step change scenario, as well as critical periods in the management of minimum system load.

## Decoupling security from coal

Ten coal-fired power stations have closed since 2012 and owners have informed AEMO that 11 GW of predominantly coal power stations will retire in the next decade.

Before retirement, coal stations are increasingly withdrawing from the power system – either operationally for maintenance or commercially for hours, days or seasons, which may occur many years before retirement. Coal has traditionally provided many of the services required to maintain a secure system. Replacement services are needed in advance of the first instances of them being offline.

## Consumer energy resources and minimum system load

To enable consumer energy resources (CER) to continue to provide value to consumers and the system at the same time as strengthening system security, reforms under the National CER Roadmap are critical.

Minimum system load (MSL) management tools, which ensure supply-demand balance across all elements of the power system, remain an ongoing priority across all NEM regions.



## Timely investments are needed to decouple reliance on coal generators for system security – enabling the next phase of the energy transition.

2025 Min of one synchronous generator online

2026 → Min system load

2027 Min of zero synchronous generators online

2026 → Min system load

2027 First coal station potentially offline\*

2029 Gladstone exit

2026 → Min system load

2027 Eraring exit

2029 Second coal station potentially offline\*

2031-32 Third coal station potentially offline\*

2026 → Min system load

2028 Yallourn exit

2031-32 Second coal station potentially offline\*

2033-34 Third coal station potentially offline\*

2031-32 Project Marinus

**South Australia:** SA is implementing the Firm Energy Reliability Mechanism to support a secure and reliable power supply.

AEMO is collaborating with ElectraNet to support South Australia operation with no gas generation online.

\* Coal power stations may be offline due to commercial or operational unavailability ahead of planned retirement.

**Queensland:** The Queensland Energy Roadmap 2025 details how state-owned synchronous generators will remain in service for system security and reliability needs.

Action is required to ensure additional MSL mechanisms are available under certain (low probability) onerous conditions.

The Gladstone Priority Transmission Investment Project and synchronous condensers from Powerlink's RIT-T are key to ensure readiness for the announced potential closure of Gladstone Power Station. It may also be prudent for industry to prepare for periods where coal units are commercially or operationally unavailable.

**New South Wales:** The NSW Electricity Infrastructure Roadmap sets out the plan to transform its electricity system as coal plants retire. The NSW transition requires planned projects and investments to be delivered on time and in full.

Assets required to maintain system security are not currently scheduled to be operational before the announced retirement date of Eraring Power Station. Planning for coal decommitments (ahead of retirements) will help avoid shortfalls.

**Victoria:** Agreements have been entered into for two of Victoria's three remaining coal plants as they approach end of life, including Yallourn Power Station scheduled to close in July 2028.

As coal exits, system security will become more closely tied to the availability of remaining coal exits, so it is prudent to plan for periods where coal units could be displaced by other generation in the market, or become operationally unavailable (ahead of retirements) to avoid shortfalls.

Delivery of planned transmission investments is required to meet long term security needs.

**Tasmania:** System security is provided by Tasmania's fleet of hydro generators with synchronous condenser capability, with back up gas generation for years of lower dam levels, all of which are expected to remain operational into the future.

Key transmission infrastructure is coming online to support network capacity and demand growth as well as greater connection to the mainland, allowing for sharing of generation resources.

### NEM: continuing MSL and additional transition points

Minimum system load conditions must be managed. Continued efforts are needed across multiple parties to support readiness, including continued roll-out of emergency backstops, flexible export capability, and transitional services to encourage greater market response.

Additional transition points are considered in further detail in the report.