AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

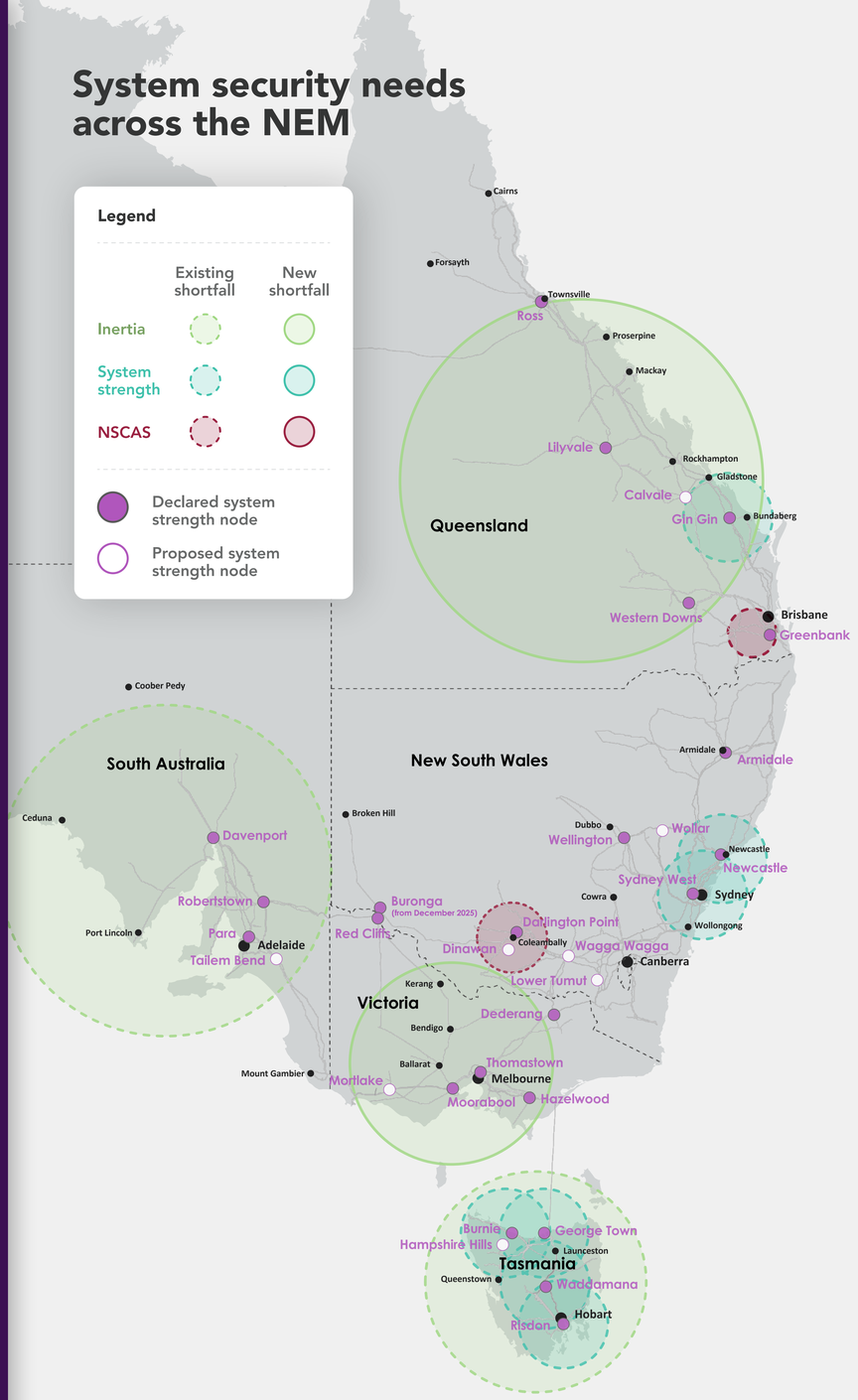
2022 System Strength, Inertia and NSCAS Reports

The Australian Energy Market Operator (AEMO) has published the 2022 assessment of system security needs across the National Electricity Market (NEM).

The System Strength, Inertia and Network Support and Control Ancillary Services (NSCAS) reports assess what is needed to ensure power system security as the NEM transitions to a greater reliance on firmed renewables.

Read full reports

System security needs across the NEM



The findings

Declared system security requirements across the NEM

The 2022 system security reports identify key services needed for each NEM state to ensure power system security over the coming decade.

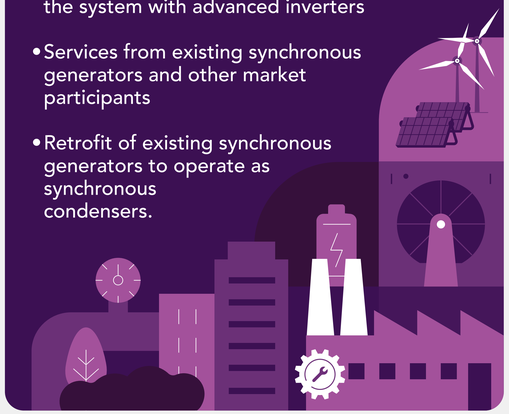
- **System strength** ensures the power system can maintain a stable voltage waveform, including after a disturbance.
- **Inertia** allows the power system to resist large changes in frequency arising from an imbalance in supply and demand after a disturbance.
- **NSCAS** are any remaining services needed to maintain security and reliability of the transmission network. This could include addressing thermal limitations, maintaining voltage profiles, addressing transient and oscillatory stability needs, and more.

AEMO has highlighted new inertia shortfalls in Queensland and Victoria, and existing system security shortfalls and gaps across the NEM.

The reports also introduce new system strength standards aligned to the amended framework.

A mix of services and technologies can help meet these needs

- Synchronous condensers fitted with flywheels
- Batteries and other equipment able to very quickly inject or absorb power when required (fast frequency response)
- Batteries, solar and wind farms connected to the system with advanced inverters
- Services from existing synchronous generators and other market participants
- Retrofit of existing synchronous generators to operate as synchronous condensers.



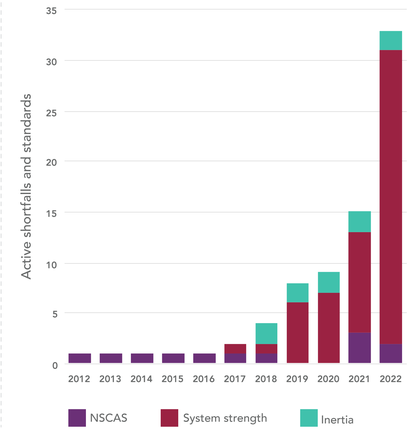
More is needed

As the power system continues to transform, more system security services are needed

Traditionally, many power system security services have been provided by thermal synchronous generating units, like coal and gas.

The NEM is transitioning with a large proportion of coal generation due to retire, while the investment in variable renewable generation grows. This change is driving the need for new power system security solutions.

Declared security needs over the past decade



Next steps

Significant industry effort is needed to deliver these services

Transmission networks in each region are responsible for delivering system strength, inertia and other security services in response to shortfalls and standards declared in these reports.

Timely delivery of committed and anticipated transmission, generator and battery projects across the NEM will be crucial. These announced projects are projected to provide important security services, in addition to the shortfalls and standards set in these reports.