



Australian Government

Department of Foreign Affairs and Trade



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Forming the National Electricity Market: Australia's electricity market reforms

November 2025

Southeast Asian countries are navigating a range of concurrent challenges in the energy sector. Electricity demand is rising rapidly, while the urgent need to integrate renewable energy sources and shifting market dynamics is placing pressure on systems to maintain electricity security and reliability. In response, there is growing momentum for regional cooperation to enhance energy connectivity and advance progress toward an integrated ASEAN Power Grid.

Australia's National Electricity Market (NEM) – one of the world's most advanced and interconnected electricity markets – offers valuable insights for Southeast Asia. It highlights how thoughtful market design, strong governance institutions and phased reform processes can support the development of integrated electricity markets. Such integration enables efficient cross-border electricity trade and investment, while safeguarding system reliability and consumer protection.

Abbreviations and acronyms

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
NEM	National Electricity Market

Purpose and overview of the National Electricity Market

The National Electricity Market (NEM) in Australia is one of the world’s longest interconnected power systems. It covers 40,000 km of transmission lines and cables that supply a population exceeding 23 million. Over A\$25 billion worth of electricity was traded through the NEM in the 2024–25 financial year alone.

Purpose of the National Electricity Market

Australia’s National Electricity Objective requires promoting efficient investment in, and operation and use of, electricity services for the long-term interests of consumers of electricity.¹ This includes the:



Electricity trading between regions of the NEM contributes to meeting this objective by supporting these aspects, particularly reliability and efficient operation.

Overview of the National Electricity Market

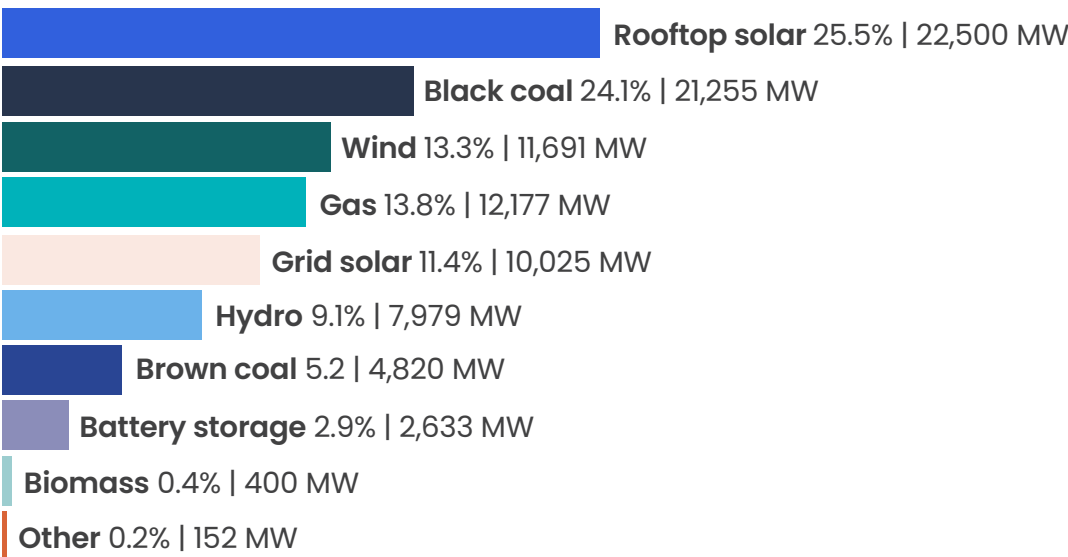
There are 5 trading regions in the market – the states of New South Wales (including the Australian Capital Territory), South Australia, Victoria, Tasmania and Queensland. Western Australia and the Northern Territory are not connected to the national network, due to the large geographical distances between these regions and the regions in the NEM.²

Each of the 5 trading regions in the NEM generates electricity from an evolving mix of sources, including coal, gas, hydro, wind, solar, and other distributed energy resources such as rooftop solar and battery storage. Figure 1 shows the generation capacity by fuel type in the NEM.

Figure 1: Generation capacity in the National Electricity Market, by fuel type, FY 2024–25

Generation capacity

By fuel type in FY25



Source: Australian Energy Market Operator (AEMO), [The National Electricity Market](#) [fact sheet], AEMO, 2025, accessed 30 October 2025.

¹ Australian Energy Market Commission (AEMC), [National energy objectives](#), AEMC website, n.d., accessed 30 October 2025

² Australian Energy Market Operator (AEMO), [The National Electricity Market](#) [fact sheet], AEMO, 2025, accessed 30 October 2025.

The NEM is currently undergoing a transition, marked by a rapid increase in intermittent renewable generation and the progressive retirement of some traditional sources, particularly coal. Market rules are being adapted to keep pace with changing requirements for power system security and reliability.³

Brief history of the National Electricity Market

Starting in the 1990s, Australia has transitioned from fragmented, state-based systems to an integrated electricity market in the eastern states and South Australia.

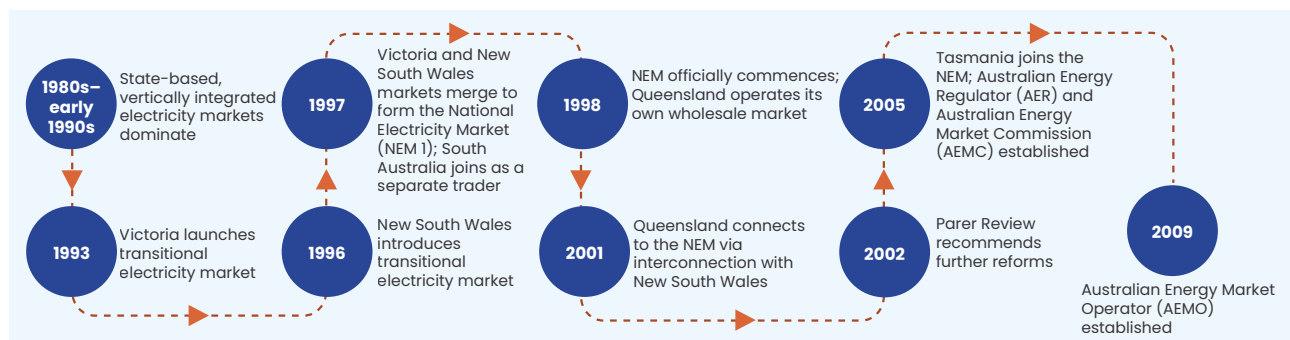
Evolution of the National Electricity Market

Australia's NEM began operating in December 1998 (Figure 2), marking a major shift toward national coordination and competition in electricity supply. Its formation followed a decade of reform, as states moved away from vertically integrated, state-run utilities toward more open and competitive market structures.

The transition to a national market was accompanied by progressive privatisation and restructuring of state-based utilities. However, legacy contracts and cross-subsidies created inefficiencies, distorted price signals, and discouraged investment – resulting in higher and less predictable electricity prices for consumers.

The NEM was established to address these challenges. It introduced competitive market structures, transparent pricing mechanisms, and regulatory frameworks designed to align costs and prices more effectively across consumer groups, support investment and improve system efficiency.

Figure 2: Key developments leading to the National Electricity Market



Parer review

A major catalyst for reform was the 2002 Parer Review, which identified key opportunities to strengthen market governance, improve efficiency and transparency, and boost competition among electricity generators. The review panel's report called for:

- enhanced transmission infrastructure and more responsive regional boundaries
- greater consumer participation in electricity markets
- increased competition in related energy sectors, including gas
- coordinated approaches to greenhouse gas emissions policy
- recognition of regional challenges within the national market framework.⁵

The review's recommendations shaped subsequent reforms, accelerating Australia's shift from fragmented, state-based systems to a nationally integrated electricity market. This transition has supported competition, system security and investment certainty.⁶ To underpin this evolution, key institutions were established in 2005 and 2009 (Figure 2).

³ Australian Energy Regulator (AER), *Semi-Scheduled Generator Compliance Bulletin*, AER, February 2025, p 2.

⁴ A Rai and T Nelson, 'Australia's National Electricity Market after Twenty Years', *The Australian Economic Review*, 53(2):165–182 2020.

⁵ W Parer, D Agostini, P Breslin and R Sims, *Towards a Truly National and Efficient Energy Market*, Commonwealth of Australia, 2002.

⁶ E Willett, 'Where the Australian energy sector is heading' [speech], Australian Competition and Consumer Commission, Energy Summit, Sydney, 17 March 2005.

Key features of the National Electricity Market design

Federal and state energy ministers have policy and oversight responsibilities in Australia's energy governance framework, while 3 key institutions undertake regulatory, advisory and operational functions. The NEM features wholesale, spot and contract markets.

Governance and market bodies

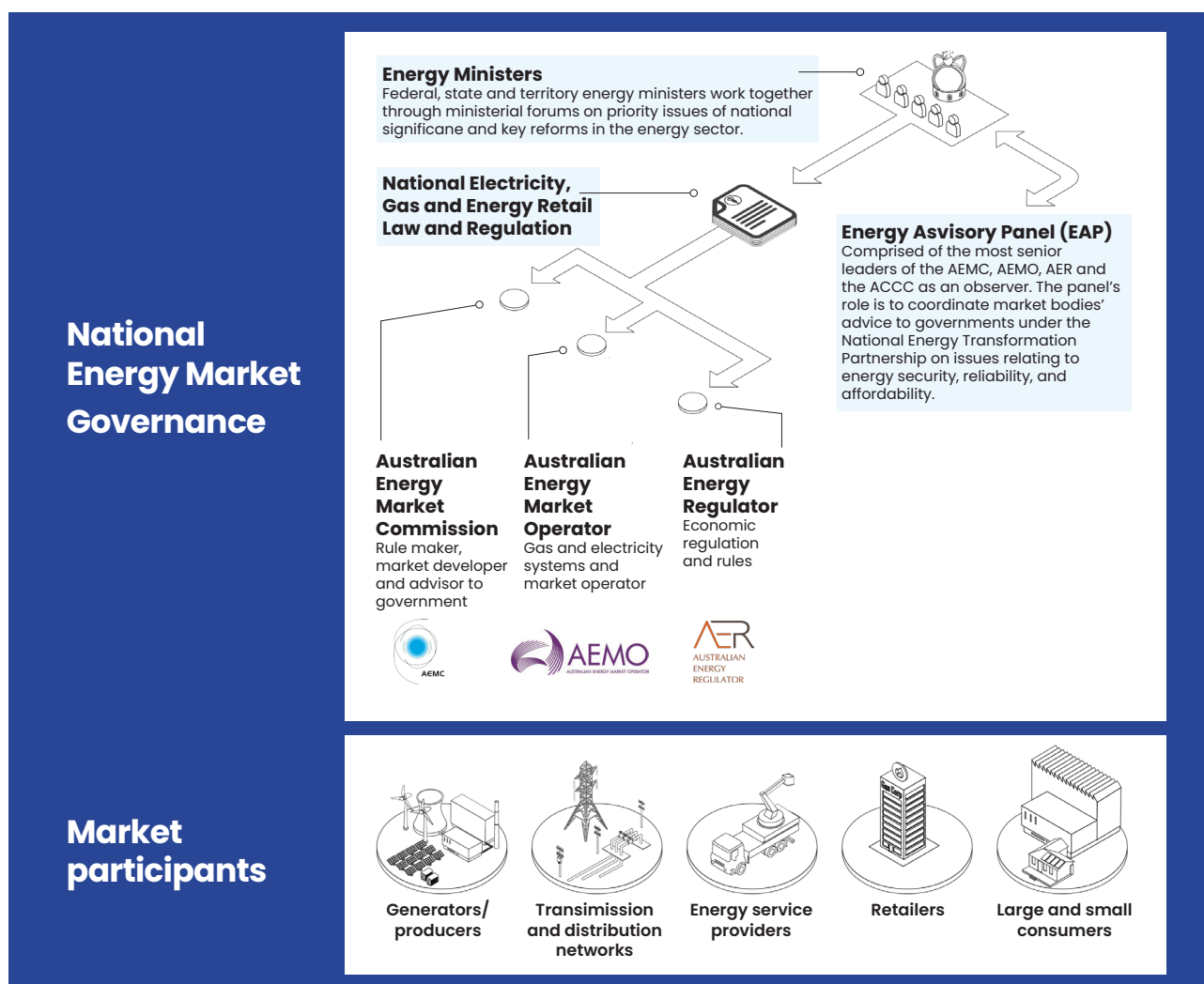
Under Australia's energy governance framework, energy ministers are key decision-makers with policy and oversight responsibilities. Each market body operates independently and reports directly to energy ministers.

The NEM is supported by 3 institutional actors:

- **Australian Energy Market Commission (AEMC)**: Responsible for developing and maintaining the rules that govern market operations.
- **Australian Energy Market Operator (AEMO)**: Manages the day-to-day operations of the electricity and gas markets, including system planning and forecasting.
- **Australian Energy Regulator (AER)**: Enforces market rules and assesses regulatory proposals from network operators, which are natural monopolies.

These institutions work together to ensure a robust regulatory and operational framework. Figure 3 illustrates how these entities interact with market participants to maintain the integrity and efficiency of the NEM.

Figure 3: Key institutional actors and market participants in the National Electricity Market



ACCC = Australian Competition and Consumer Commission

Source: Australian Energy Regulator (AER), [Our role](#), AER website, n.d., accessed 30 October 2025.

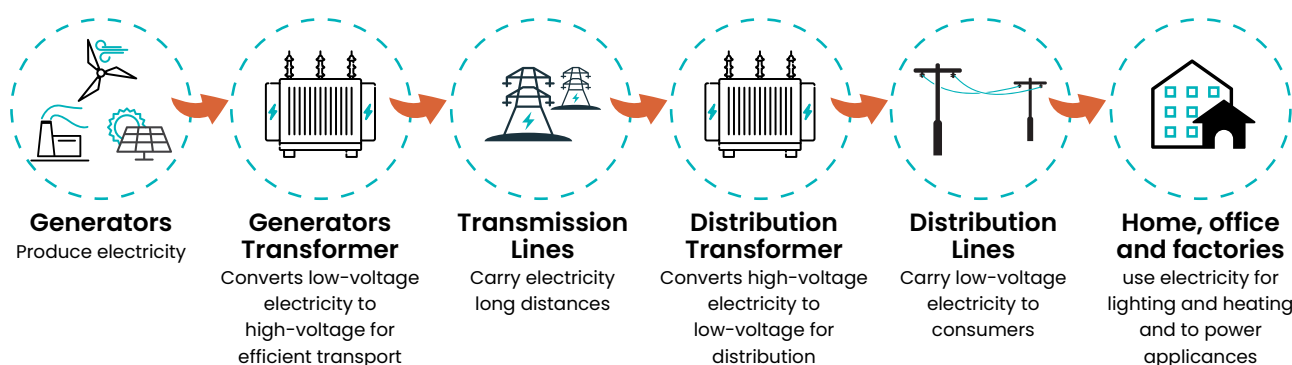
Electricity wholesale market

The NEM wholesale market acts as the mechanism through which generators sell electricity and retailers buy electricity. Retailers then resell electricity to the businesses and households that are energy consumers.

Figure 4 outlines the key stages of electricity supply in the NEM. Currently, the wholesale market includes approximately **30 retailers** and over **100 generation companies**, reflecting a competitive and diverse landscape.⁷

Generators bid to supply electricity to retailers in 5-minute intervals. From the offers, AEMO selects the generators with the lowest wholesale price to supply the market first. To match supply with demand, AEMO then accepts increasingly higher cost offers until the dispatch price is reached, which represents the highest accepted offer needed to meet the current demand. AEMO also maintains reserve capacity to ensure system reliability.

Figure 4: Energy supply from generators to consumers



Source: A Jarrett, *'Electricity supply and the NEM'*, MGA Thermal blog, 16 January 2022.

Electricity spot market

AEMO is responsible for centrally coordinating and matching the supply of electricity from generators with real-time consumption by households and businesses. It is also responsible for the settlement of all electricity bought and sold through the NEM's wholesale electricity pool. AEMO uses the spot market as the mechanism for this process.

The systems balance supply with demand in real time, select which generators are dispatched, determine the spot price, and in doing so, facilitate the financial settlement of the physical market.

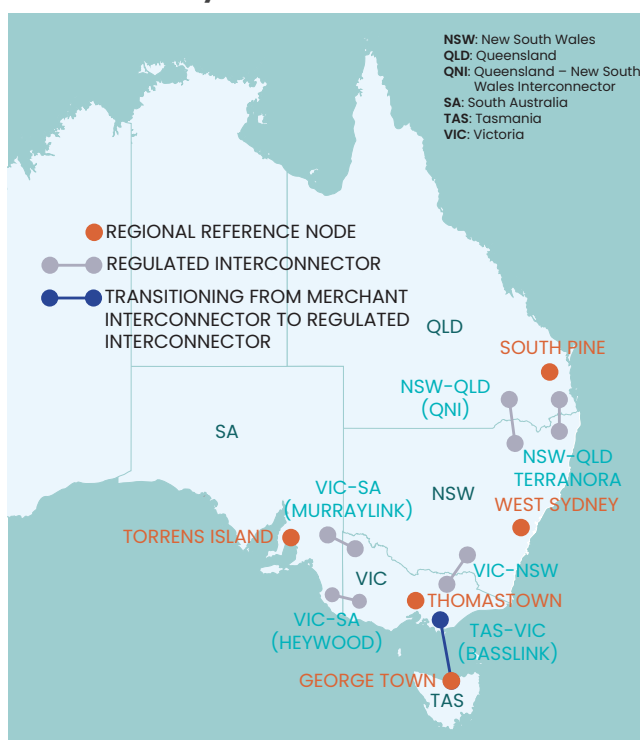
There is a separate spot price for each of the 5 regions in the NEM. Transmission network constraints or congestion can create price separation between regions.

Spot prices are also influenced by:

- regional generation mix and local supply and demand dynamics.
- weather events that drive spikes in demand.
- pricing decisions by individual generators.

Figure 5 illustrates the 5 trading regions in the NEM, with their key nodes and the network connections regulated through the NEM.

Figure 5: Trading regions in the National Electricity Market, with key nodes and connections



Note: The Basslink interconnector, which links Tasmania and Victoria, is currently undergoing a transition.

Source: Adapted from Australian Energy Market Commission (AEMC), *How power is dispatched across the system*, AEMC website, n.d., accessed 30 October 2025.

Electricity contract market

While all electricity is traded through the NEM, retailers and large customers can also enter into contracts with generators. These contracts allow parties to agree on a fixed quantity of electricity at a set price over a defined period. This arrangement helps retailers manage financial risks associated with wholesale market price fluctuations and contributes to more stable energy costs for consumers.

For generators, wholesale contracts provide predictable revenue streams and support investment planning. Contracts also incentivise generators to supply electricity when it is most needed by the system, contributing to overall reliability. An alternative risk management strategy is vertical integration, where generators and retailers operate under the same corporate structure.

The contract market complements the spot market by providing financial certainty and supporting long-term investment in generation capacity.

Roles of the Australian Energy Regulator

In the Australian system, the AER performs 4 key functions:

- **Network regulation:** Sets the maximum revenue that network businesses can recover from customers, ensuring fair pricing and efficient investment.
- **Wholesale market regulation:** Monitors and reports on the operation of wholesale electricity and gas markets, where generators, distributors and retailers trade energy.
- **Retail regulation:** Enforces retail market rules, issues retailer authorisations, and sets the Default Market Offer – a reference price that acts as a safety net for small customers.
- **Compliance and enforcement:** Investigates and enforces compliance with obligations under the National Electricity Law and National Energy Retail Law.

As the NEM continues to evolve, the AER's monitoring responsibilities are expanding – particularly in overseeing wholesale market regulation in response to shifting generation profiles. The rapid growth of renewable energy and distributed energy resources, such as rooftop solar and battery storage, is reshaping how electricity is generated, consumed and managed. These changes demand stronger oversight to safeguard market security, reliability, and affordability for consumers. In this context, the AER also monitors electricity contract market trading between emerging generation technologies and retailers.

Peer to peer exchange of insights

The process of developing and implementing the NEM demonstrates how careful design and management can deliver market systems that maximise the benefits of reforms while minimising costs and disruption to consumers. Six key lessons have emerged from Australia's experience:

- **Clear problem definition and reform objectives:** Reform was driven by well-defined challenges and a shared understanding of the goals.
- **Political leadership and resourcing:** High-level political commitment, along with time, energy and financial incentives, were critical to success.
- **Confidence-building strategies:** Reforms were designed to build trust among stakeholders and the public.
- **Inclusive support structures:** Strong institutional frameworks and active stakeholder participation underpinned the reform process.
- **Consultative pace:** The reform timeline allowed for meaningful consultation across all affected parties.
- **Effective industry structure:** Getting the market and industry structures right was essential to fostering competition and investment.

These insights are highly relevant for Southeast Asian countries considering energy market reforms and regional integration. They highlight the importance of strategic planning, inclusive governance and adaptive regulation in delivering sustainable and equitable energy transitions.



AER participates in the 16th AERN meeting in Kuala Lumpur, Malaysia. Source: ASEAN Secretariat

About this document

This brief is a summary of information, edited and updated by Partnerships for Infrastructure (P4I), regarding Australia's National Electricity Market, which was presented at the 16th Meeting of the ASEAN Energy Regulators Network (AERN), held on 10 June 2025 in Kuala Lumpur, Malaysia, and hosted by the Energy Commission of Malaysia. P4I supported Caroline Serrano, Executive Director, Compliance and Enforcement, Australian Energy Regulator, to present on behalf of the Australian Government.

Acknowledgement

This publication has been funded by the Australian Government through the Department of Foreign Affairs and Trade and the Partnerships for Infrastructure (P4I) initiative. P4I partners with Southeast Asia to drive sustainable, inclusive and resilient growth through quality infrastructure. More information about P4I is available at partnershipsforinfrastructure.org.

Partnerships for Infrastructure acknowledges Aboriginal and Torres Strait Islander peoples as the traditional custodians of Country throughout Australia, and we pay our respects to Elders past and present. P4I also recognises early connections between Southeast Asia and the First Nations peoples of Australia.

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