

Vision

For Australia to have a world-class electricity system supporting our economy and prosperity

Independent Review into the Future Security of the National Electricity Market

Blueprint for the Future – a Snapshot

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Vision for the National Electricity Market

Key outcomes

	INCREASED SECURITY <ul style="list-style-type: none">Obligations on new generators to provide essential security servicesMore conservative operation in each region through maintaining system inertia and tighter frequency controlA stronger risk management framework to protect against natural disasters and cyber security attacks
	FUTURE RELIABILITY <ul style="list-style-type: none">Obligations on new generators will ensure adequate dispatchable capacity in all regionsNew generators incentivised to enter the marketExisting low-cost generators don't close prematurely
	REWARDING CONSUMERS <ul style="list-style-type: none">Large and small consumers rewarded for reducing their demand when neededSystem upgrades and new generation will be achieved at lowest costBetter access to information to support consumer choice
	LOWER EMISSIONS <ul style="list-style-type: none">A continuous emissions reduction trajectory delivering certaintyEmissions reduced by 28% below 2005 levels by 2030, heading towards zero emissions in the second half of the century

Key pillars

		
ORDERLY TRANSITION <p>To provide certainty through an agreed emissions reduction trajectory</p> <ul style="list-style-type: none">Clean Energy Target adopted to drive investment and reduce emissionsAll generators will be required to provide three years' notice of closure	SYSTEM PLANNING <p>To help make the transition to an innovative, low emissions electricity system:</p> <ul style="list-style-type: none">A system-wide grid plan informs network investment decisionsRegional security and reliability assessments	STRONGER GOVERNANCE <p>To drive faster rule changes, overcome challenges and deliver better outcomes:</p> <ul style="list-style-type: none">A new Energy Security Board to deliver the blueprint and provide system-wide oversightStrengthened energy market bodies

THE BLUEPRINT WILL DELIVER

Four Key Outcomes



INCREASED SECURITY

A secure electricity system is one that continues to operate across the entire region despite disruptions. A more secure power system will be resilient to the integration of new technologies and resistant to the threat of natural disasters and cybersecurity attacks.



FUTURE RELIABILITY

Reliability of supply is one of the foundations of our electricity system. As ageing generators retire we must ensure that new generators enter the market to meet demand.



REWARD CONSUMERS

Consumers are at the heart of our electricity system. The actions of consumers will be harnessed to improve the reliability and security of the electricity system and keep costs down. Consumers will be better informed and rewarded for managing their electricity demand. System upgrades and new generation will be achieved at lowest cost.



LOWER EMISSIONS

The electricity sector will do its share to meet Australia's commitment to reduce emissions. A long-term emissions reduction trajectory will encourage investment in system capabilities.

ENABLED BY

Three Key Pillars



ORDERLY TRANSITION

The orderly transition package will integrate emissions reduction and energy policy. The package includes a long-term emissions reduction trajectory and a *Clean Energy Target* to drive clean energy investments and support a reliable electricity supply.

Generators will be required to provide three years' notice of closure.



SYSTEM PLANNING

Enhanced system planning will ensure that security is preserved, and costs managed, in each region as the generation mix evolves. Network planning will ensure that new renewable energy resource regions can be economically accessed.



STRONGER GOVERNANCE

Stronger governance makes the system more adaptable and able to integrate emerging technologies. A new *Energy Security Board* will drive implementation of this blueprint.



THE BLUEPRINT WILL DELIVER

Security

Generator security obligations

Under strict new standards, all new generators connecting to the National Electricity Market must meet technical requirements to contribute to fast frequency response and system strength. Security will be improved through regular and comprehensive reviews of the generator connection standards for these technical requirements.

System security obligation

A minimum level of inertia in each region, supported by regular assessments, will be maintained so that the system operates more conservatively. This will make the system better able to withstand disruptions like generator outages or interconnector failures.

Strengthened risk management

A stronger risk management framework will provide greater protection against natural disasters and cyber security attacks.

AND

Reliability

Generator reliability obligation

Obligations on new generators will ensure adequate dispatchable capacity is present in all regions to ensure consumer demand for electricity is met. They can meet their obligation using a variety of technologies or partnership solutions. The obligation will provide regional investment signals.

Incentives for new generation

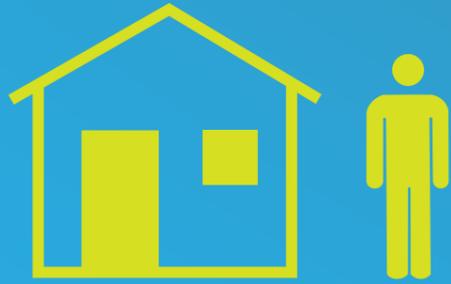
The *Clean Energy Target* mechanism will provide incentives to encourage new generators into the market, thereby ensuring reliability as Australia meets its international commitments to lower emissions.

Existing generators don't close prematurely

The focus of the *Clean Energy Target* is on incentivising new low emissions generation while supporting our emissions reduction trajectory. There is no penalty for high emissions generation. System security and reliability will benefit from existing thermal generators that can continue to operate.

Investor confidence

The market operator will publish a non-binding register of intended generator closures to signal investment opportunities and provide community awareness.



THE BLUEPRINT WILL

Reward consumers

Rewards for managing demand

Individual consumers, from householders through to large industry, will be financially rewarded if they agree to manage their demand and share their resources such as solar panels and battery storage.

Avoiding new network costs

Prices for all consumers, not just those who own solar panels or batteries, will be lower than they would otherwise be. Demand management, better planning and data sharing will reduce the need for expensive upgrades to the transmission and distribution networks.

Lowest cost generation

Prices for all consumers will benefit from more generators entering the market to complement the continuing contribution from existing low-cost generators.

Price inquiry and better information

The Australian Competition and Consumer Commission (ACCC) price inquiry is examining the electricity retail market. This provides an opportunity to improve the transparency and clarity of electricity retail prices and help customers be aware when the terms of their offer change or discounts expire.

AND

Lower emissions

International commitments

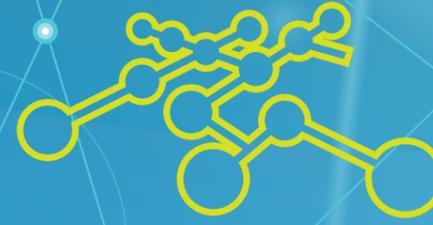
Australia has committed to reduce its emissions by 28 per cent below our 2005 levels by 2030, and ongoing reductions towards zero emissions in the second half of the century.

Electricity sector

The electricity sector is the largest single source of emissions in Australia and will need to play its part in reducing emissions. Modelling for the Review estimates that by 2030, 42 per cent of electricity demand will be met by renewable generation.

Emissions reduction trajectory

Certainty in emissions reduction policy will make it easier to plan and provide confidence to investors in new generation and network infrastructure.



THE BLUEPRINT IS ENABLED BY

An orderly transition

Throughout the transition, security and reliability will be preserved by a Generator Reliability Obligation, security obligations, conservative operation of the system, and a long-term and steady emissions reduction trajectory.

National agreement

The Review recommends that the Australian, State and Territory governments agree to a national emissions reduction trajectory.

Clean Energy Target

A *Clean Energy Target* will encourage new low emissions generation into the market in a technology neutral fashion. Under this mechanism, new low emissions generators such as wind, gas, or the combination of coal with carbon capture and storage, will receive incentives to enter the market.

Australia's existing Renewable Energy Target (RET) will continue to its scheduled 2020 end for new participants but should not be extended.

In addition to incentivising reliable generation into the market, a goal of the *Clean Energy Target* is to lower long-term emissions. For example, a mix of wind, solar and coal generation would be equally acceptable as a mix of wind, solar and gas generation as long as the emissions reduction trajectory is achieved.

Three years' notice of closure

All existing large electricity generators will be required to provide a binding three years' notice of closure. This will signal investment opportunities for new generation and give time for communities to adjust.

SUPPORTED BY

System planning

Regional assessments

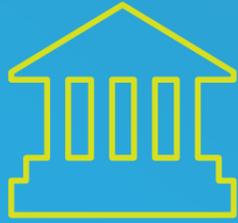
Regular assessments will be undertaken to inform security and reliability obligations for each region. This will allow for early intervention by the market operator.

System-wide grid plan

The introduction of an integrated grid plan will inform investment decisions and ensure security is preserved in each region as the generation mix evolves. This will ensure that we can generate and deliver electricity more efficiently.

Priority projects

Significant investment decisions on the interconnection between states or between regions within states will be made from a system-wide perspective and in the context of a more complex energy system. The system operator will develop a list of potential priority projects to enable efficient development of renewable energy zones.



AND Stronger governance

A new Energy Security Board

A new *Energy Security Board* will drive the implementation of the blueprint on behalf of the Council of Australian Governments (COAG) Energy Council. It will have an Independent Chair and Deputy Chair appointed by the COAG Energy Council.

Annual health check

The *Energy Security Board* will deliver an annual *Health of the National Electricity Market* report to COAG Energy Council that will track the performance of the system, the risks it faces, and the opportunities for improvement.

Strengthening existing market bodies

The existing market bodies – the Australian Energy Market Commission (AEMC), the Australian Energy Regulator (AER) and the Australian Energy Market Operator (AEMO) – will be resourced, strengthened and made more effective through coordination provided by the *Energy Security Board*.

Developing a national strategic energy plan

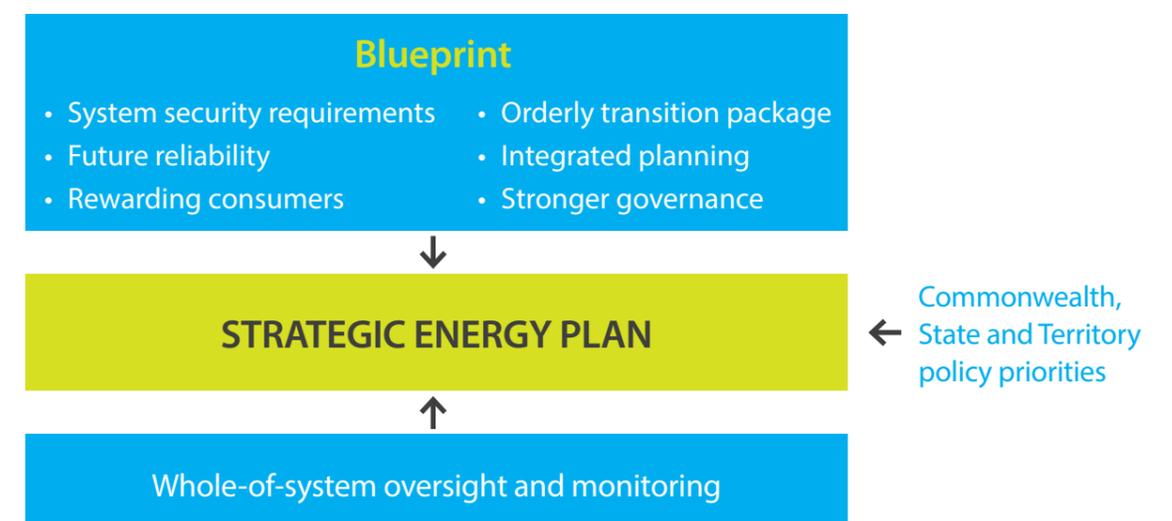
Clear strategic direction and shared accountability for outcomes will ensure that our electricity systems, now and into the future, will:

- Provide a secure, reliable and affordable electricity supply
- Support investor confidence
- Contribute to reducing emissions
- Be innovative and responsive to change.

This broad-based transition presents a range of opportunities and challenges for the National Electricity Market and for the institutional and regulatory framework in which it operates. At present, there is no strategic plan for addressing these challenges and capturing these opportunities.

One of the greatest challenges facing the nation is the development of an integrated emissions reduction and energy policy to support the orderly transition. This is a crucial first step.

This blueprint will inform COAG Energy Council's development of a strategic energy plan.



How did we develop the blueprint?

In preparation of this report the Review Panel – Alan Finkel (Chair), Terry Effeney, Chloe Munro, Karen Moses and Mary O’Kane – consulted widely. Internationally, the Panel visited regulators and operators across Europe and the United States, and commissioned a review of international best practices from the International Energy Agency. The support from these international energy market bodies substantially informed the Review’s insights. Their generosity was underpinned by two decades of cooperation with their Australian counterparts, during which time they have come to see Australia as an innovative and forward thinking country.

Many of the challenges to energy security and affordability have been caused by a changing technology landscape in the National Electricity Market (NEM).
 Australian Academy of Technology and Engineering

The Panel observed that every country or jurisdiction has a unique electricity system. The one thing most have in common is a strategic plan to preserve energy security and affordability while transitioning to a lower emissions future.

The Review undertook unprecedented public consultation through meetings and roundtables across Australia. More than 450 people attended meetings in Adelaide, Brisbane, Melbourne, Hobart and Sydney, including market participants, technology experts, consumer and business representatives and the public. The Panel attended more than 120 meetings with stakeholders.

Principles-based reforms are required to enhance the structure and operation of the NEM. These reforms should accommodate policy objectives while providing security and affordability of supply for industrial and residential users.

BHP Billiton

Following publication of the Preliminary Report, the Review called for submissions. More than 390 submissions were received from businesses, academics, governments and individuals. The vast majority of these were public and were published by the Review.

The National Electricity Market

Wholesale value of electricity traded
\$11.7 billion

40,000 kilometres of transmission lines

National maximum summer operational demand
32,859 MW

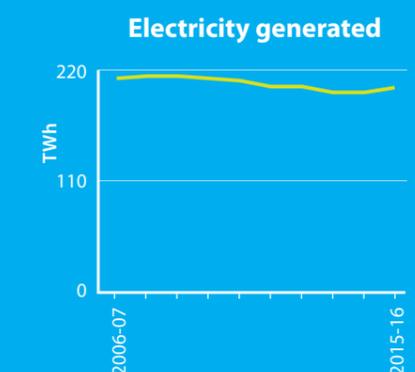
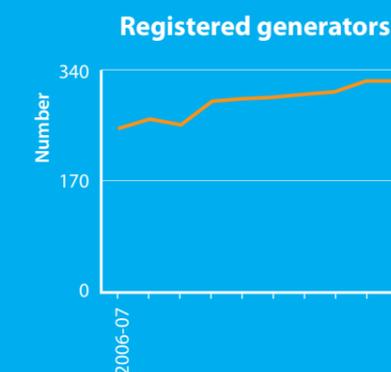
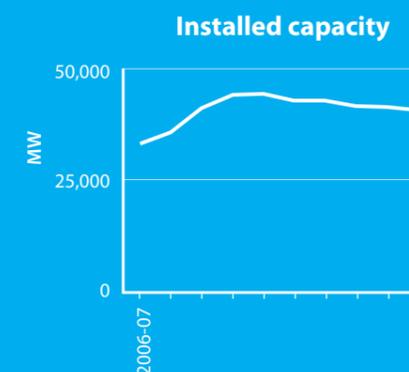
Number of metered customers
9.6 million

National maximum winter operational demand
31,977 MW



Installed capacity
47,148 MW

NEM emissions
162 Mt CO₂-e



NEM emissions data sourced from Jacobs (2017)
 All other data sourced from the State of the Energy Market May 2017 (2017)