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CLIMATE CHANGE AUTHORITY

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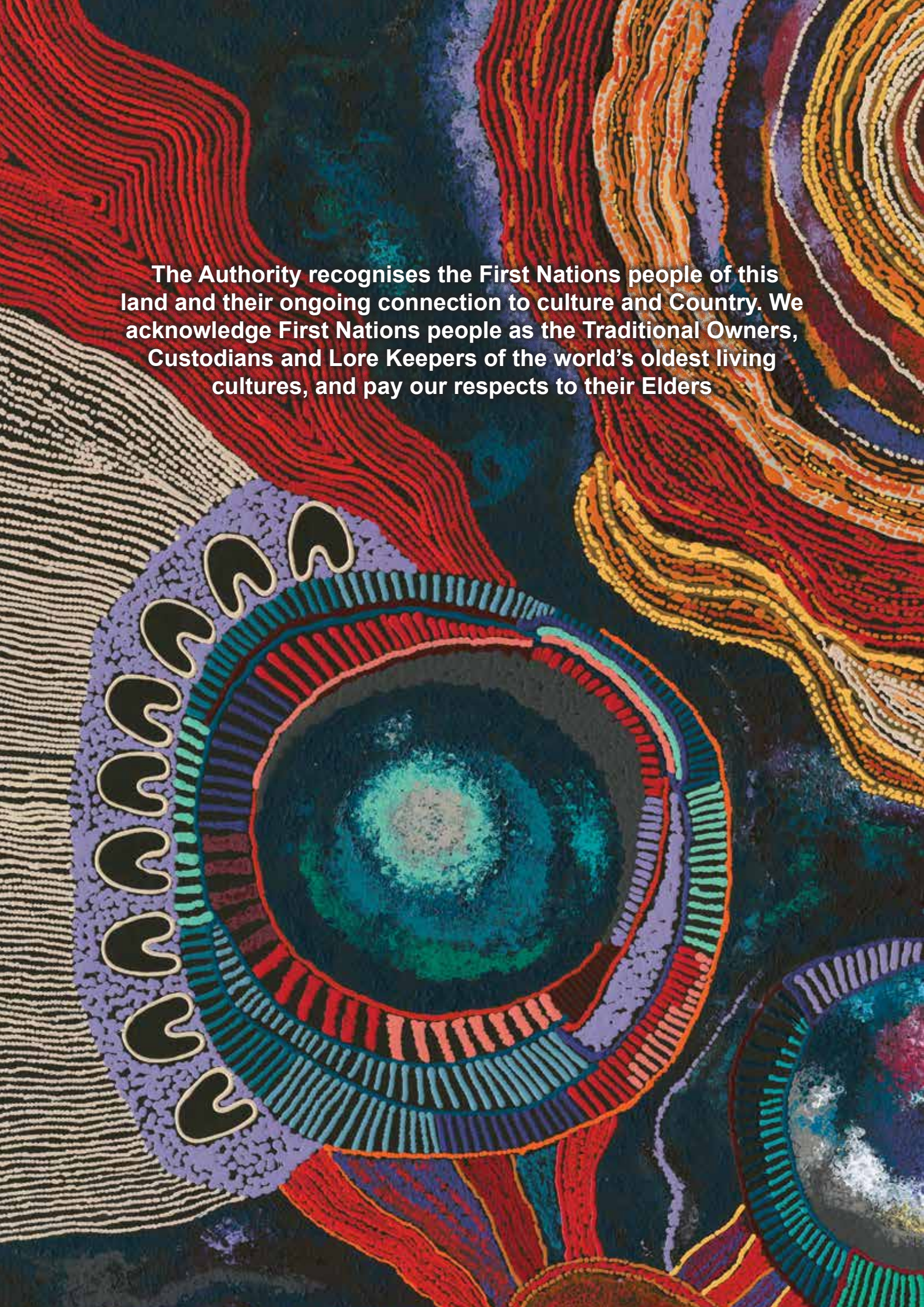
Birrang (Wiradjuri for journey)



The Authority recognises the First Nations people of this land and their ongoing connection to culture and Country. We acknowledge First Nations people as the Traditional Owners, Custodians and Lore Keepers of the world's oldest living cultures, and pay our respects to their Elders

CLIMATE CHANGE AUTHORITY

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13 November 2026

The Hon Chris Bowen MP
Minister for Climate Change and Energy
Parliament House
CANBERRA ACT 2600

Dear Minister Bowen

In response to your request of 30 August 2026, and in accordance with section 14 of the *Climate Change Act 2022*, we are pleased to submit the Authority's *2026 Annual Progress Advice* to inform your fifth Annual Climate Change Statement to Parliament.

This includes our advice on the operation of the Safeguard Mechanism, and opportunities to accelerate reductions in fossil methane emissions.

In accordance with section 14(6) of the *Climate Change Act 2022*, the Authority will publish a copy of this advice on its website no later than the day you table your statement. The Authority is also required by the Act to cause its advice to be tabled within 15 sitting days from today, and in any event no later than the day that you table your statement.

The Authority will work with your office to ensure these requirements are met.

Yours sincerely,

The Hon. Matt Kean
Chair

Kath Rowley
Chief Executive Officer

Acknowledgements

The Climate Change Authority would like to thank the many individuals and organisations who contributed their time and expertise to the development of this report.

The Authority published 3 public consultation papers in connection with this advice. The first: *Evidence Platform Issues Paper* was released in March 2026 and received 24 submissions in response. The second: *Fossil Methane: A Near-Term Abatement Opportunity* was released in June 2026 and received 51 submissions. The third: *2026 Annual Progress Advice Consultation Paper* was released in July 2026 and received 136 submissions in response.

The Authority also held more than 170 stakeholder engagements with a wide range of stakeholders.

These contributions have provided valuable evidence to help inform the Authority's analysis and recommendations.

Public submissions received by the Authority in response to all 3 consultation papers have been published and can be viewed via the consultation page on the Authority's website.

A range of government agencies also provided technical expertise to the Authority in the preparation of this report.

The views expressed in the report are the Authority's own. They should not be taken as the views or positions of the entities mentioned above.

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Abbreviations and acronyms

ACCU	Australian Carbon Credit Unit
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ANU CCEP	Australian National University Centre for Climate and Energy Policy
APA	Annual Progress Advice
BEV	Battery Electric Vehicle
CCS	Carbon Capture and Storage
CEFC	Clean Energy Finance Corporation

CER	Clean Energy Regulator
CFOP	Carbon Farming Outreach Program
CLEAN	Coalition for LNG Emission Abatement toward Net zero
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EP	Evidence Platform
EV	Electric Vehicle
EYPS	EY-Parthenon Strategy
FM	Fossil methane
GWh	Gigawatt hour
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
IEA	International Energy Agency
IEEFA	Institute for Energy Economics and Financial Analysis
IGCC	Investor Group on Climate Change
INPEX	Inpex Corporation
IPCC	Intergovernmental Panel on Climate Change
LCLF	Low Carbon Liquid Fuel
LDAR	Leak Detection and Repair
LNG	Liquefied Natural Gas
MARS	Methane Alert and Response System
MW	Megawatt
MWh	Megawatt hour
NABERS	National Australian Built Environment Rating System
NEPA	National Environmental Protection Agency
NGER	National Greenhouse and Energy Reporting
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Administrator
NSW EPA	New South Wales Environment Protection Authority
NVES	New Vehicle Efficiency Standard
OGMP	Oil and Gas Methane Partnership
SHEPI	Social Housing Energy Performance Initiative
SMC	Safeguard Mechanism Credit
TEBA	Trade-Exposed Baseline-Adjusted
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VAM	Ventilation Air Methane

Legislative references

All legislation cited in this report is Commonwealth legislation unless otherwise indicated. Commonwealth legislation can be found on the Federal Register of Legislation: www.legislation.gov.au.

The following Commonwealth Acts are cited in this report:

Climate Change Act 2022

Climate Change Authority Act 2011

Environment Protection and Biodiversity Conservation Act 1999

Offshore Petroleum and Greenhouse Gas Storage Act 2006

National Greenhouse and Energy Reporting Act 2007

Summary

Australia's emissions reduction targets – 43% below 2005 levels by 2030, 62-70% below by 2035, and net zero by 2050 – are cornerstones of our response to climate change. They reflect the growing scale of climate risks, the urgency of action, Australia's social and economic circumstances and the opportunities created by the global effort to decarbonise.

Australia is making real progress. A substantial policy framework is now in place, and the clean energy transition is gathering momentum. Large-scale and rooftop solar projects are setting new deployment records. Household battery capacity more than doubled in the first 9 months of 2026 (DCCEEW, 2026t), and electric vehicles accounted for more than one-third of new car sales in September, more than double their share a year earlier (Hayward, 2026).

This lays the foundations for deeper emissions reductions in coming years, but the pace must accelerate substantially. Australia's national emissions fell by around 6 Mt CO_2-e in the year to June 2026, up from the average of 4 Mt CO_2-e/year over the past decade. Achieving Australia's 2030 and 2035 targets will require sustained average annual reductions of around 25 to 30 Mt CO_2-e. Closing this gap is a formidable challenge, but the imperative to do so is clear. Delaying emissions reductions today will only increase the costs and risks we bear tomorrow.

Climate risks are escalating. The World Meteorological Organization found that 2025 was one of the top 3 warmest years in the observational record, despite the cooling influence of La Niña, and that the past 11 years were the 11 warmest on record (WMO, 2026). Recent extreme heat, fires, floods and other disasters around the world demonstrate the growing exposure of communities, economies and infrastructure to a warming climate.

The latest science reinforces the importance of acting quickly. UNEP's 2026 Limiting Overshoot report finds that temporarily exceeding 1.5 ºC of warming is now unavoidable. But the extent and duration of that overshoot are still choices. Faster emissions reductions can limit peak warming, reduce the time spent above 1.5 ºC and improve the prospects of bringing temperatures back down (UNEP, 2026b).

Every fraction of a degree of warming avoided reduces risks to people, societies, economies and nature.

And every additional tonne of emissions avoided reduces the accumulation of greenhouse gases in the atmosphere, helping limit future warming. Earlier action also brings forward the benefits of clean energy, more efficient buildings, lower-emissions industry and transport. Investments made today will continue to deliver benefits beyond the target year and make subsequent emissions reductions easier to achieve.

Climate targets remain essential for setting ambition, guiding investment and focusing collective effort. Australia should continue to aim for the upper end of its 2035 target range and accelerate action towards it, but the question is not simply where emissions land in a particular year. It is whether Australia is reducing emissions as quickly as practicable while sustaining and building the energy, industrial, environmental and economic systems needed to reach net zero and prosper.

Clean electricity is the platform on which much of the rest of Australia's emissions reduction task depends.

Electricity remains Australia's largest source of emissions, but it is also the sector where mature, increasingly cost-effective technologies are delivering some of the deepest emission reductions this decade. Electricity and energy sector emissions have fallen 37% from their peak in 2009 as renewable generation has expanded.

Renewables supplied 40% of Australia's on-grid electricity generation in 2024-25 and 44% in 2025-26. In the National Electricity Market, renewables supplied a record 45% in 2025-26, more than doubling their share over the preceding 7 years (Open Electricity, 2026a). Large-scale solar investment and rooftop solar installations reached record highs in the June quarter of 2026 (CER, 2026k, 2026l). Grid-scale and household batteries are playing a rapidly growing role, storing low-cost renewable electricity during the day and releasing it in the evening peak, helping reduce wholesale prices (AER, 2026b).

The challenge now is to ensure replacement generation is built and connected quickly enough to support the orderly retirement of ageing coal-fired power stations while maintaining a secure, reliable and affordable electricity supply. Around two-thirds of the National Electricity Market's remaining coal-fired generation capacity is scheduled to retire by 2035, and generators – including Yallourn (2028) and Eraring (2029) – have announced closure dates before 2030 (AEMO, 2026a; Baringa, 2024).

Keeping these closures on schedule is in Australia's interest. As coal-fired power stations age, they become less reliable and more costly to maintain. Extending the lives of coal generators would make it more difficult and expensive for Australia to achieve its emissions reduction targets.

Coal exit depends on replacement generation, storage, transmission and system security services being delivered ahead of coal closures, not after them. Australia will need enough dispatchable replacement capacity to support the system during periods of low renewable output and peak demand. This means continuing to deploy batteries, pumped hydro and other storage technology at scale, with adequate peaking gas generation and synchronous condensers to provide the firming, system strength and reliability services that coal plants have historically supplied. Over time, as more storage, transmission and renewable generation come online, reliance on gas should progressively decline. Delays in delivering this replacement capacity would increase electricity costs and reliability risks, complicate the orderly retirement of coal-fired generation, and slow emissions reductions across the economy.

Australia has no shortage of proposed renewable projects. Recent analysis finds that the aggregate pipeline of renewable generation and batteries being pursued by developers is substantially larger than the capacity required to achieve 82% renewable electricity by 2030, and that enough projects have now been approved to meet the 82% target. That pipeline needs to be converted into operating assets. Across Australia's main grids, only around 6% of fully approved renewable projects have secured long-term contracts, while construction of wind, solar and batteries remains well below the rate required (IEEFA, 2026a).

Accelerating delivery requires greater revenue certainty to attract private investment and enable large-scale renewable projects to reach financial close. Government efforts to accelerate approvals and grid connections, improve transmission availability, and unblock workforce and supply-chain constraints remain crucial.

An enduring framework that provides greater revenue certainty is urgently needed to accelerate projects from approval to contracting, financial close, construction and connection.

Governments at all levels should build on existing policies and investment momentum to establish the long-term conditions needed to unlock private capital. Large electricity users also have an important role in supporting investment through long-term contracting arrangements.

Timely investment in transmission infrastructure is also essential to the electricity transition. AEMO estimates that transmission investment under its Integrated System Plan will deliver $28 billion in net market benefit to consumers to 2050 (AEMO, 2026a).

Progress is being made in strengthening the social licence needed to deliver this infrastructure. Initiatives such as the new independent Developer Rating Scheme are improving transparency, accountability and community confidence by providing communities with clearer information about developers' capability, conduct and approach to engagement. The scheme is also helping establish stronger community engagement as an industry benchmark. Stronger community engagement, social licence and political stability can help accelerate the delivery of renewable energy and transmission infrastructure (AEIC, 2026).

The renewable energy challenge is increasingly a challenge of turning projects approved on paper into electrons on the grid.

Clean energy can lower the cost of living and strengthen energy security. The transition to renewable electricity offers opportunities to reduce emissions while lowering energy costs for households and businesses. Australians are already embracing these technologies, with more than 4.5 million rooftop solar installations and more than 700,000 battery installations across homes and small businesses (CEC, 2026b; CER, 2026n). The recent expansion of the Small-scale Renewable Energy Scheme to systems of up to 1 MW extends support to larger businesses, farms and community facilities.

The next opportunity is to combine clean electricity with much greater energy efficiency and electrification of Australia's existing building stock. Combining rooftop solar, batteries, efficient electric appliances and electric vehicles can dramatically reduce household energy costs. A typical 3-person capital city household could save $4,400-$4,900 annually on electricity, gas and petrol, cutting energy bills by up to 90% (AEMC, 2025a). While these technologies require upfront investment, the savings can outweigh the costs over time, with typical payback periods of around 7 years for rooftop solar and switching from gas to electric appliances (AEMC, 2025c).

However, the benefits of electrification are not yet equally accessible. Upfront costs and split incentives remain significant barriers, particularly for renters, social housing tenants and lower-income households. Policies should ensure the benefits of cheaper, more efficient energy are available to people regardless of whether they own their home.

Transport is moving quickly.

Transport is also approaching a tipping point. Battery-electric and plug-in hybrid vehicles accounted for 29% of new light vehicle sales in 2026 (year to September 2026), up from 13% in 2025 (Authority analysis).

Falling battery costs, greater model choice and the New Vehicle Efficiency Standard are helping shift Australia's vehicle fleet. Electrification lowers running costs, reduces emissions and improves Australia's

energy security by reducing dependence on imported petroleum. The disruptions to global fuel supplies through the Strait of Hormuz in 2026 provided a stark reminder of Australia's exposure to international oil markets and supply chains and have accelerated the shift to electric vehicles.

Every vehicle that can run on Australian electricity rather than imported oil makes our transport system cleaner and our economy more resilient to global shocks.

The priority now is to sustain momentum in light vehicles, ensure charging infrastructure keeps pace with uptake, and accelerate electrification of trucks, buses and other suitable modes. Sustainable low-emissions fuels will also be needed for aviation, shipping and other transport tasks that are difficult to electrify.

The next wave of reductions must reach deeper into the economy.

As electricity decarbonises and transport electrification accelerates, a greater share of Australia's emissions reduction task will shift towards industry, resources, agriculture and other harder-to-abate activities.

Companies in the industry and resources sectors already have commercially available opportunities to improve energy efficiency, electrify low-temperature heat, reduce fugitive emissions and deploy renewable electricity. Other technologies, including low-emissions production processes for some emissions-intensive commodities, require further demonstration, infrastructure, cost reduction or reliable sources of clean energy before they can be deployed widely.

Policy needs to do both jobs at once: accelerate take up of commercially available abatement now; and create the investment conditions for technologies needed in the 2030s.

A competitive Australian industry in a decarbonising world will be one that produces more value with fewer emissions.

This year's advice therefore gives particular attention to 2 policy levers capable of driving the next wave of industrial emissions reductions: the Safeguard Mechanism and fossil methane abatement.

The Safeguard Mechanism is Australia's principal policy for reducing emissions from its largest industrial facilities. The 2023 reforms established declining emissions-intensity baselines, with the standard decline rate set at 4.9% a year to 2030. The settings now need to evolve to reflect Australia's 2035 ambition.

We recommend an integrated package that aligns post-2030 Safeguard settings with national action towards a 70% reduction in emissions below 2005 levels by 2035 – the upper end of Australia's 2035 target range. The Authority's analysis indicates that alignment with a 70% target would require a baseline decline rate of about 6.7% a year from 2031 to 2035 under current coverage and trade-exposed baseline-adjusted (TEBA) settings. The final rate would need to reflect forecast production, scheme coverage, reformed TEBA arrangements and an appropriate reserve.

Stable and predictable settings are important for investment. Continued access to flexible compliance through Australian Carbon Credit Units (ACCUs) and Safeguard Mechanism Credits (SMCs) allows facilities facing different technology readiness and abatement costs to contribute to the national task even as their lower-emissions alternatives mature.

The Safeguard Mechanism should ask industry to make a fair contribution to Australia's national target, while giving businesses the certainty and flexibility to make long-term investments.

We do not recommend introducing restrictions or discounts on the use of ACCUs at this time, but will continue to monitor this issue, including through the 2028 National Greenhouse and Energy Reporting (NGER) Scheme Review. Reformed TEBA arrangements should address material carbon leakage risks without weakening the overall emissions objective. Complementary measures should tackle specific barriers to on-site abatement. Maintaining flexibility while targeting barriers to on-site abatement will allow Safeguard facilities to meet an ambitious emissions reduction task at reasonable cost and is more likely to accelerate on-site abatement than ACCU restrictions or discounts would.

Fossil methane warrants additional action because faster reductions can help limit global warming in the near term. Methane has a much stronger warming effect than carbon dioxide while it remains in the atmosphere, but a shorter atmospheric lifetime. Fossil methane, principally from coal mining and gas production, accounts for around 24% of Australia's methane emissions, and around 6% of Australia's total greenhouse gas emissions.

The priority is to deploy established methane reduction measures now while addressing the barriers holding back other opportunities. This includes detecting and repairing leaks, minimising avoidable venting and flaring, identifying viable open-cut pre-drainage projects and establishing where ventilation air methane technologies can operate safely and effectively. Stronger regulatory requirements can be introduced progressively as measures become ready for wider implementation and evidence shows they can operate safely and deliver material emissions reductions.

Cutting fossil methane can help limit warming in the near term. Australia can use established measures now while preparing other technologies for wider deployment.

We recommend that the Australian Government work with state and territory governments and industry to establish a national fossil methane action plan. The plan should set a national target, identify priority actions and responsibilities, and establish implementation timeframes. Preparing the plan should not delay action that governments and regulators can begin earlier. The focus should be on turning available solutions into measurable emissions reductions as soon as possible.

Land and removals will become increasingly important.

Australia's land sector has made the largest contribution to national emissions reduction to date and remains a substantial net carbon sink. The challenge is to maintain and strengthen that contribution while protecting agricultural productivity, biodiversity and the resilience of regional communities.

Protecting existing carbon stocks and increasing carbon sequestration will require well-targeted incentives and high-integrity outcomes. Policy should prioritise the protection of existing carbon stocks, credible additional sequestration and stronger measurement and transparency. Incentives should increasingly support outcomes that can deliver multiple benefits for landholders, including carbon storage, productivity, biodiversity and resilience in a changing climate.

The ACCU Scheme will remain an important part of this policy mix. The Authority's 2026 review of the ACCU Scheme found continued confidence in the scheme will depend on maintaining high integrity, transparency, and conservative crediting, including careful management of permanence and reversal risk as the climate changes.

Reducing agricultural emissions will require a complementary approach that maintains productivity and competitiveness. Proven low-emissions practices should be deployed where they are commercially viable now, while research, demonstration and cost-reduction continue for emerging technologies. Opportunities include improved energy efficiency, renewable energy and fertiliser management, alongside emerging methane-reducing technologies for grazing livestock, low-emissions fertilisers and next-generation pasture and forage systems. The objective is to progressively lower emissions intensity while maintaining productive, competitive food and fibre industries.

Together, these priorities will place growing demands on how Australia's land is managed. Food and fibre production, carbon sequestration, renewable energy and nature repair will sometimes compete for land, but can also coexist and create new, diversified income streams for landholders. Managing these opportunities and trade-offs will require thoughtful land-use planning, appropriate incentives and policies that support productive landscapes and high-integrity environmental outcomes. Australia's large land mass is an economic advantage if these opportunities are managed well.

Partnerships with First Nations peoples will be central to this task. First Nations peoples bring deep knowledge of land management and are already delivering climate, environmental, economic and cultural benefits across the landscape. Land use will be a focus of the Authority's 2027 work program.

Australia's opportunity extends beyond its borders.

Australia's economic interest in the global transition is larger than its domestic emissions reduction task. As a major exporter of energy and resources, Australia is particularly exposed to changes in global demand for emissions-intensive commodities. It is also particularly well placed to supply many of the low-emissions energy products, commodities and technologies a net zero global economy will require.

The opportunity is broader than creating new export industries. Cleaner domestic production can protect the competitiveness of existing industries, reduce exposure to volatile fossil-fuel markets and create new sources of regional investment and employment.

Australia should work more closely with major trading partners to coordinate the transition of existing supply chains towards lower-emissions commodities. Long-term offtake agreements, common standards, coordinated infrastructure and investment, and collaboration on technology can help bridge the gap between technically possible projects and commercially investable ones. Realising that opportunity will require Australia to pay close attention to how global climate, trade and industrial policies are reshaping demand for the commodities we produce.

The next 4 years matter.

Australia now has a clearer picture than ever of the pathways available to reduce emissions. Many of the technologies required this decade are now available, and policies are in place to support and drive their uptake. The central challenge is deploying them at sufficient speed and scale.

The task is substantial, but it is achievable. Australia does not need to choose between cutting emissions and building a stronger economy. The task is to strengthen and expand on existing policies so that investment, productivity, competitiveness and resilience improve as emissions fall.

Delay carries a cost. Infrastructure takes years to plan and build. Vehicles and equipment purchased now lock in emissions for a decade or more. Industrial assets operate for several decades. And replacing ageing coal-fired power stations requires timely investment in, and delivery of, new generation, storage and network infrastructure to maintain a secure, reliable and affordable energy supply. Every year of slower deployment increases the amount of work left for later and can make subsequent reductions more disruptive and expensive. With global temperature rise set to cross 1.5 °C, delays to emissions reductions also contribute to increasing systemic risks.

The Authority's findings are informed by extensive analysis and consultation with industry, investors, experts, governments, communities and environmental organisations. That evidence points in a consistent direction. Australia is walking in the right direction; now we need to run.

The transition is under way. The opportunity now is to turn momentum into speed, and speed into lasting economic advantage.



Recommendations

Recommendation	Rationale
Safeguard Mechanism	
1. Align the 2031 to 2035 Safeguard emissions budget with a 70% economy-wide emissions reduction pathway. Set the Safeguard emissions budget for 2031 to 2035 so covered facilities contribute a proportional share of national emissions reductions of 70% on 2005 levels by 2035 – consistent with the approach taken for the period to 2030. Set the baseline decline rate for 2031 to 2035 to deliver that emissions budget. The decline rate should take account of forecast production, scheme coverage, trade-exposed baseline adjustments and an appropriate reserve.	A 70%-aligned Safeguard emissions budget is consistent with the Authority's advice that Australia should aim for the upper end of the 2035 target range. Compared to a 62%-aligned emissions budget, it could deliver 14 Mt CO_2-e more net abatement in 2035 and 40 Mt CO_2-e more cumulative net abatement between 2031 and 2035. Modelled ACCU prices under a 70%-aligned pathway remain well below carbon values commonly associated with limiting warming to below 2 °C. The extra abatement delivered by a more ambitious Safeguard trajectory is therefore likely to generate substantial net societal benefits. Under current policy settings, the Authority estimates the Safeguard's proportional contribution to the national abatement task would require a baseline decline rate of 6.7% per year from 2031 to 2035.
2. Use targeted measures rather than general discounts or limits on the use of ACCUs to drive greater on-site abatement. Preserve trading as a central feature of the Safeguard Mechanism to support achievement of a 70%-aligned emissions budget at reasonable cost and provide stable and predictable settings for long-term investment. Prioritise targeted responses to specific barriers to on-site abatement, including of fossil methane emissions.	A 70%-aligned Safeguard emissions budget, supported by trading and targeted complementary measures, is preferable at this stage to general limits or discounts on ACCU use. Trading enables emissions reductions to occur where and when they are cost-effective. It is particularly valuable where on-site options are not yet technically available or commercially viable. Some on-site abatement opportunities face infrastructure, regulatory or other barriers that would not be resolved by ACCU limits or discounts. Targeted measures can respond directly to these barriers – such as the fossil methane recommendations in this advice, and coordinated investment in renewable electricity infrastructure for remote facilities – helping unlock more on-site abatement and reduce reliance on ACCUs. The Authority will continue to assess progress on on-site abatement and consider whether further targeted responses or changes to ACCU use are warranted in its 2028 NGER Scheme Review. Any material change to compliance settings would require clear evidence, advance notice and appropriate transition arrangements.
3. Reform trade-exposed baseline-adjusted (TEBA) arrangements to better manage carbon leakage risk and support an equitable distribution of costs. Reform TEBA arrangements from a facility basis to a sectoral basis to better target activities facing a demonstrated and material risk of carbon leakage, while preserving the overall ambition for Safeguard emissions reductions.	Compared with the current facility-based TEBA approach, a sectoral approach could improve the distribution of abatement effort across industries and create a more level playing field within industries. This would reduce risks of carbon leakage, securing the environmental benefits of domestic abatement. In designing any sector or product approach, the Government should: a) provide consistent treatment for facilities producing the same goods b) preserve incentives for on-site abatement c) consider interactions with any border carbon adjustment d) provide appropriate transition arrangements for facilities receiving assistance under the current framework.

4. Change the timing of the Annual Progress Advice so the Authority can assess complete Safeguard Mechanism data. Amend the *Climate Change Act 2022* as soon as possible to require the Authority to provide its annual advice by 30 June each year, following the release of final Safeguard Mechanism data in April each year.	The current statutory timing for the Authority's annual advice provides very limited opportunity for the Authority to analyse Safeguard Mechanism data, including to assess the extent of on-site abatement, and for the Minister to consider the Authority's advice. Changing the timing for the Authority's annual advice to 30 June each year will allow the Authority to prepare better quality advice and the Minister to provide a more considered response.
Fossil methane	
5. Accelerate fossil methane abatement through targeted enabling measures and progressively stronger requirements. This should include: a) developing a nationally consistent leak detection and repair (LDAR) framework for oil and gas facilities, mandating compliance with the framework for offshore oil and gas facilities, and supporting states and territories to introduce equivalent requirements for onshore oil and gas facilities b) identifying opportunities for methane pre-drainage at open-cut coal mines and addressing material policy, regulatory, measurement and infrastructure barriers to their development c) developing technical and safety guidance to enable deployment of ventilation air methane abatement at underground coal mines d) identifying, monitoring and reducing material methane emissions from abandoned and inactive coal mines and oil and gas wells e) comparing onshore and offshore venting and flaring practices to identify and minimise avoidable releases. The Government should work with state and territory governments, regulatory agencies and industry on these measures, and progressively strengthen requirements over time. Requirements should use existing regulatory systems where possible.	The Safeguard Mechanism provides a financial incentive to reduce methane emissions, but does not remove technical, safety and other barriers to action. Targeted complementary measures would accelerate take up of available methane abatement practices and technologies. Leaks account for around 13% of Australia's fossil methane emissions. Leak detection and repair is an established practice, but requirements vary. A nationally consistent framework would establish common expectations, which could be implemented through existing regulatory arrangements. Open cut coalmining accounts for around 30% of fossil methane emissions. Pre-drainage could reduce emissions where geology, mine design and operating conditions are suitable. Coordinated action by governments and industry is needed to identify suitable mines and key barriers, and develop the guidance, regulatory reform or other policy changes needed to drive take up. Ventilation air methane accounts for over 30% of fossil methane emissions. Trials are under way to test abatement technologies at the low and variable methane concentrations typical of Australian underground mines. Technical and safety guidance will be needed to enable take up of proven technologies. Abandoned and inactive assets account for a small share of reported fossil methane emissions, but uncertainty is high. A coordinated approach is needed to identify material sources and clarify responsibilities for monitoring and mitigation. Regulatory design and commencement dates should allow technical, safety and other barriers to be addressed before the relevant obligations take effect. This would avoid imposing requirements that cannot in practice be met. Rules could be strengthened as more technologies become proven and practical.

6. Improve and publish more information about fossil methane emissions and abatement. This should include: a) publishing fossil methane emissions using both 20-year and 100-year global warming potentials b) requiring Safeguard facilities with material fossil methane emissions to submit rolling 5-year methane abatement plans each year to the Clean Energy Regulator for publication c) publishing more granular information about material fossil methane sources and the methods used to estimate them d) improving the reporting of, and response to, large or unusual methane releases e) progressively improving the precision of NGER methods by incorporating on-site measurement f) establishing consistent reporting of average ventilation air methane concentrations at underground coal mines. Changes should be made through the NGER Scheme where possible and avoid unnecessary duplication.	Current reporting requirements do not provide a complete and consistent picture of fossil methane emissions, planned abatement or barriers to delivery at individual facilities. This impedes action by industry, investors and policymakers. Requiring rolling 5-year methane abatement plans would provide a consistent forward view of material methane sources, intended measures, expected emissions reductions, implementation timeframes and barriers to delivery. This would strengthen accountability, help assess progress under the national action plan, and identify where further Government action may be needed. More granular information about methane sources, estimation methods and ventilation air methane concentrations would help governments, facilities, investors and researchers identify material sources and assess abatement opportunities. It could also support development of better emissions estimation methods, improving the effectiveness of the Safeguard Mechanism. More consistent reporting of material methane release events would improve the emissions record and support timely investigation, regulatory response and corrective action. Building on existing reporting schemes would avoid unnecessary duplication. Facilities should be able to use or cross-reference equivalent information reported under the Safeguard Mechanism, planning requirements, mandatory climate-related financial disclosures, state and territory requirements or recognised voluntary frameworks where that information meets the specified facility-level requirements.
7. Establish a national fossil methane action plan by the end of 2027. The action plan should: a) include a national target for reducing fossil methane emissions b) identify a lead area within the Australian Government responsible for delivery of the plan, working with jurisdictions and industry c) identify priority actions, responsibilities and implementation timeframes, taking account of emissions reduction potential, implementation costs, technology readiness and the near-term warming benefits of reducing methane emissions d) set out a pathway for progressively stronger abatement obligations. The Australian Government should work and consult with states and territories in developing the action plan.	Responsibility for fossil methane policy is spread across the Australian, state and territory governments. A national action plan would establish common direction, clear responsibility and implementation timeframes. A national target would focus action and provide a clear basis for assessing progress. The action plan would coordinate the information reforms and targeted measures in Recommendations 5 and 6. It would provide a pathway from action we can take now, through work to address specific barriers, to progressively stronger requirements over time. Establishing the action plan should not delay measures that can begin now. Clear prioritisation would help direct effort towards measures that offer greater near-term climate value relative to their implementation costs. GWP-100 would remain the basis for Australia's national emissions inventory, economy-wide emissions targets and Safeguard compliance. The Authority will undertake further analysis in 2027 to advise on the design and level of the national target.

Highlights

Clean electricity and EV sales are leading emission reductions

Renewables are a growing share of on-grid electricity, but we need to go faster

2025-26 renewables generation share

44%

Up from 40% in 2024-25, but less than the 45-48% expected for 2025-26

More renewable energy projects would go ahead if investors had greater certainty about future returns.

EV sales have taken off amid the global fuel crisis

2026 battery and plug-in hybrid electric vehicle sales share (Year to Sept 2026)

29%

Up from 13% in 2025

The switch to EVs could see total transport sector emissions start to fall.

Source: Open Electricity, 2026b; DCCEEW 2026b

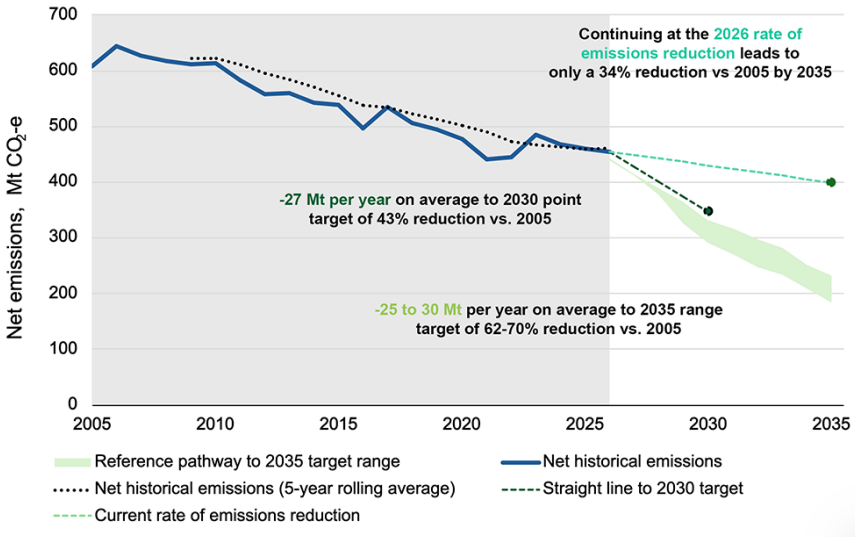
Source: CCA analysis of EVDB, 2026

Australia is making progress, but there is much more to do to meet our climate targets

National emissions cuts need to lift from 6 Mt CO_2-e in 2026, to 25-30Mt a year on average to 2035.

Electricity sector emissions are falling the fastest.

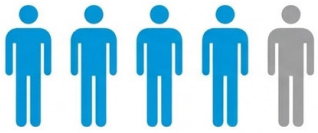
More needs to be done across the economy, including reducing fossil methane emissions and increasing carbon storage in the land sector.

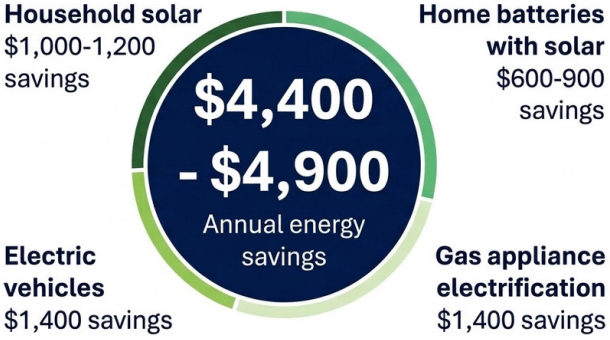


Source: CCA analysis of DCCEEW, 2026q

Clean technologies can reduce energy costs, maintenance and emissions

One in 5 Australian households is experiencing, or at risk of, energy hardship. Improving access to electrification could help address this.



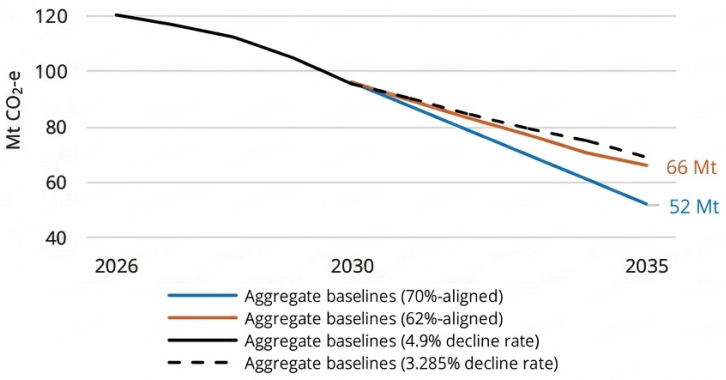


Source: ECA, 2025a

Source: AEMC, 2025c

Stronger emissions cuts from Australia's biggest industrial emitters can help close the gap to the 2035 target

Adopting a 70%-aligned Safeguard decline rate would mean 14 Mt CO_2-e fewer emissions from Australia's biggest industrial emitters in 2034-35, compared to a 62%-aligned declined rate.



14 Mt CO_2-e = more than 2 percentage points to Australia's 2035 target

Source: CCA internal analysis, 2026; DCCEEW, 2025a

Cutting fossil methane emissions can help limit global warming

Methane has a much stronger short-term climate impact than carbon dioxide.

CH_4 = CO_2

1 tonne of methane

84 tonnes of carbon dioxide

Equivalent warming over 20 years

Coal and gas extraction emits 30 Mt CO_2 equivalent of fossil methane per year.

Coal emissions:

23

Mt CO_2-e in 2024

+

Gas emissions:

7

Mt CO_2-e in 2024

= 6%

of national emissions in 2024

Note: 2024 is the latest available data on fossil methane emissions.

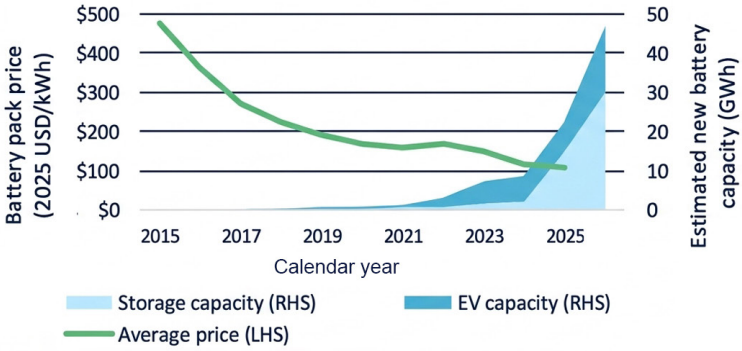
Source: DCCEEW, 2026e

Cheaper batteries are making it easier to electrify homes, businesses and industry

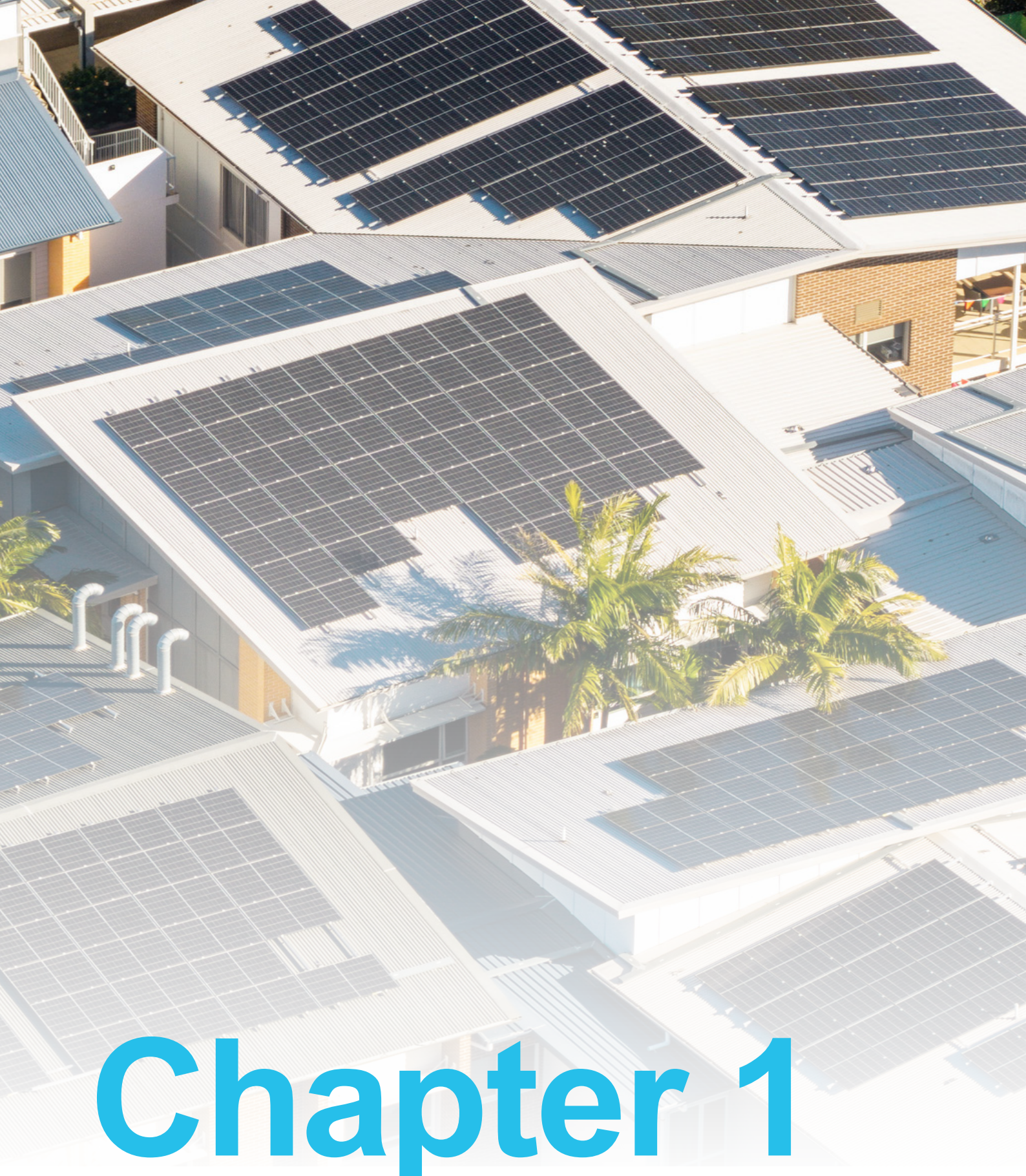
Battery pack prices fell 77% between 2015 and 2025

EVs, household and utility-scale battery storage uptake is growing quickly

lowering wholesale electricity prices and consumer costs



Source: Authority analysis of BNEF, 2025b; 2026b; FCAI and EV Council via EVDB, 2026. See notes in Figure 3.



Chapter 1

Introduction

Chapter 1 key points

- Climate change is driving growing risks and costs across Australia's economy, environment and communities.
- A changing global energy landscape is creating new opportunities for clean industries and strategic low-emissions partnerships.
- Strong partnerships with communities are fundamental to delivering a fair and durable transition and supporting Australia's contribution to decarbonising global supply chains.
- Businesses and investors need stable, credible and predictable policy settings to unlock investment at the scale and pace required.

The Climate Change Authority is a federal statutory agency that provides independent, evidence-based advice to the Australian Government on climate change policy. This report is the Authority's 5th Annual Progress Advice (APA) to inform the Minister for Climate Change and Energy's Annual Climate Change Statement to Parliament, as required under the *Climate Change Act 2022.*

Harnessing the opportunities of the net zero transition is more critical than ever, and not just to reduce emissions. Energy sovereignty, security and affordability have emerged as defining challenges of 2026. This year has been marked by energy security concerns stemming from the Middle East conflict, ongoing cost-of-living pressures, and the prospect of a severe El Niño as Australia enters the summer months. At the same time, global average temperatures are expected to exceed 1.5 °C above pre-industrial levels in the coming years, increasing the likelihood of extreme heat, bushfires and other severe climate impacts (UNEP, 2026b; WMO, 2026). Emissions reduction must therefore go hand in hand with building Australia's resilience to the physical impacts of a changing climate.

Climate change is intensifying risks and costs for Australia's people, environment, and economy.

Disruptions to Australia's communities, ecosystems, and economy continue to grow as extreme weather becomes more severe and volatile. 2025 was the warmest year on record for Australian sea surface temperatures (BOM, 2026a). In 2026, Australia experienced its most severe heatwave since the summer of 2019-20, bushfires in the southeast, and record-breaking winter heat across the continent (BOM, 2026c; Ham, 2026; Logan, 2026).

The economic cost of extreme weather is also growing. Natural disasters are estimated to cost Australian communities and businesses around $38 billion a year, with these costs projected to potentially rise to $73 billion a year by 2060 (Deloitte, 2021). Between 2004 and 2022, climate-related factors contributed to a quadrupling in the average cost of Australian insurance premiums (CCA, 2025c). These trends highlight the importance of urgently accelerating emissions reductions while preparing for climate impacts that can no longer be avoided.

Global energy shocks are strengthening the business case for clean industries and low-emissions partnerships.

This year's global fuel crisis highlighted that building a low-emissions economy is a significant economic and energy security opportunity for Australia. Conflict in the Middle East triggered significant oil price volatility, driving up fuel prices globally, including in Australia (ACCC, 2026b; IEA, 2026e). Analysis by the Climate Council estimates that Australian motorists paid a total of $5 billion more for fuel between March and early October 2026 than they would have at pre-conflict prices (Climate Council, 2026). Australia's heavy reliance on imported liquid fuels leaves households and businesses exposed to global supply disruptions and price shocks (IEEFA, 2026b).

The crisis also highlighted the benefits of electrification and low-emission fuels. By reducing dependence on imported fossil fuels, these technologies can strengthen energy security, improve resilience to global market volatility and support emissions reductions (IEEFA, 2026c).

Australia can make an important contribution to global climate action. Demand for low-emissions technologies and products is growing as countries, states and businesses around the world continue to

pursue net zero emissions. As of 22 October 2026, 174[1] countries have announced net zero targets, and net zero commitments now cover more than 84% of global GDP (DCCEEW, 2025c). Australia can help to meet the rising demand for low-emissions products. With its abundance of clean energy and critical minerals, skilled workforce and strong institutions, Australia has the capacity to develop green export industries and help reduce emissions in other parts of the world (CCA, 2025a; The Superpower Institute, 2024).

As President of COP31 negotiations, Australia can also advance international cooperation on green trade and investment by promoting open markets and interoperable standards that support trade in low-emissions goods, services, and technologies. This will help attract global capital, deepen clean economy partnerships, strengthen resilient clean energy supply chains and position Australian exporters to compete in emerging green markets (DFAT, 2026).

Meaningful partnerships with communities are fundamental to Australia's contributions to decarbonising global supply chains.

Regional Australia is critical to the success of the energy transition. First Nations peoples, rural landholders and regional towns play a central role in clean energy generation and lower-emissions industry development.

First Nations peoples have a significant stake in many of the projects required to achieve Australia's emissions reduction goals. Around 65% of Australia's iron ore assets are situated on land subject to a Native Title Declaration and over 60% interface with registered Indigenous Land Use Agreements (WWF, 2025). In addition, an estimated 43% of clean energy infrastructure expected to get Australia to net zero emissions is located on land subject to First Nations ownership, management and/or other special rights, including Native Title (Net Zero Australia, 2023).

Australia has room to improve in strengthening partnerships with communities hosting large-scale clean energy projects. While First Nations peoples, regional and rural communities can benefit from the energy transition, these communities also bear the negative impacts of clean energy infrastructure projects at a local level (Productivity Commission, 2025; Regional Australia Institute, 2025). Despite general support for the energy transition across regional Australia, community engagement and benefit sharing remain a concern for some host communities (AEIC, 2026; CCA, 2025a).

Lasting community support and genuine partnerships will be critical to delivering the infrastructure required for Australia to decarbonise its domestic economy and exports. Maintaining social licence and ongoing support from these impacted communities is crucial to the buildout of the energy transition while avoiding costly delays and legal challenges (Productivity Commission, 2025). First Nations community support has been found to facilitate faster project development cycles for clean energy projects (EY, 2025). Projects that provide clear social benefits also attract broader pools of capital (EY, 2025). Ensuring regional and First Nations communities benefit from and participate in the energy transition will help maintain social licence and reinforce Australia's role as a reliable supplier of low-emissions energy and commodities.

Businesses and investors need stable, predictable policy to plan and invest in the net zero transition.

A stable policy environment has material benefits for investment and productivity. Stable and consistent policy reduces investment risk, lowers financing costs, and provides businesses and investors with the confidence to make the long-term investments needed for the transition (IGCC, 2025; Treasury, 2025a). Treasury modelling suggests a disorderly transition could reduce cumulative investment by around $500 billion by 2050 (Treasury, 2025a). In contrast, proactively investing in a low-emissions economy could grow the Australian economy by $680 billion and create 250,000 more jobs to 2070 (Deloitte, 2020).

Through maintaining stable policy, accelerating emissions reductions, capitalising on low-emissions export opportunities, and preparing for the impacts of climate change, Australia can continue to thrive in a decarbonising world.

1. As of 22 October 2026. Count is based on DCCEEW analysis of NDCs submitted to the UNFCCC, official documents, announcements and speeches by countries, and webpages of Climate Ambition Alliance, AOSIS, Climate Laws of the World, Net Zero Tracker, and European Commission. Count excludes non-signatories to the Paris Agreement such as Libya, Iran, Taiwan and the United States. European Union countries are included. Yemen and Kosovo are included as they have net zero targets, despite not being parties to the Paris Agreement. Count includes targets of net zero before 2050 (12 countries), by 2050 (146 countries), and after 2050 (16 countries).

Report outline

Prepared under section 14 of the *Climate Change Act 2022*, this advice informs the Minister's Annual Climate Change Statement and recommends actions to support a prosperous, resilient and low-emissions future for Australia. Our advice is divided into 5 chapters:

Chapter 1: Introduction – outlines the environmental, economic, geo-political, and social context in which the 2026 Annual Progress Advice was prepared.

Chapter 2: Progress this year – provides a high-level assessment of how effectively Australia is reducing emissions nationally and by economic sector whilst building resilience to climate impacts.

Chapter 3: Safeguard Mechanism – recommends strong policy settings beyond 2030, which sees facilities covered by the Safeguard Mechanism make a proportional contribution to a 70% reduction by 2035, and maintains flexible compliance options, manages carbon leakage risks and reduces barriers to on-site abatement.

Chapter 4: Fossil methane – details actions the Government can take to accelerate fossil methane abatement.

Chapter 5: Sector snapshots – provide an overview of Australia's progress towards a prosperous, resilient net zero future across 7 sectors, including additional abatement opportunities.

Appendix A – provides our analysis of emissions from new and expanded Safeguard facilities.

References – sets out references used in this advice.

Unless otherwise specified, references to years in relation to Safeguard data, emissions targets, emissions data, emissions projections, and modelling data are to financial years ending 30 June. For example, 2026 refers to the financial year ending 30 June 2026.



Chapter 2

Progress this year

Chapter 2 key points

- Australia's energy transition is under way, but emissions reductions need to accelerate significantly to stay on track for 2030 and 2035.
- Renewable energy is growing strongly, but the pace of rollout needs to roughly triple to replace retiring coal generation and meet growing demand.
- Electric vehicle adoption has more than doubled since 2025, and charging infrastructure needs to keep up so all Australians can participate.
- Expanding access to household electrification can help reduce energy bills while cutting emissions.
- As demands on land evolve, careful planning will be needed to manage land-use change and balance competing priorities.
- Investing in climate adaptation can reduce costs, protect productivity and help communities withstand increasingly frequent and severe climate impacts.

This year's progress shows Australia's transition is under way but must accelerate. Australia's clean energy transition is gathering momentum, but emissions are not yet falling fast enough to meet national targets. Faster deployment of renewable electricity must go hand in hand with greater electrification of transport, buildings and industry.

Renewable electricity and electrification are mutually reinforcing. As electricity becomes cleaner, switching from fossil fuels to electric alternatives delivers greater emissions reductions and can lower energy costs. In turn, electrification increases demand for clean electricity, helping drive further investment in renewable generation and storage. Realising these benefits will require faster delivery of electricity infrastructure and grid connections, effective market settings, expanded electric vehicle charging infrastructure and the removal of barriers to household and industrial electrification.

Australia must also prepare for the climate impacts already unfolding. Cutting emissions will limit future risks, while investing in resilience will help communities, businesses and essential services manage the impacts that can no longer be avoided. Advancing both priorities will protect lives and livelihoods, support productivity, and reduce the economic disruption and rising costs of a changing climate.

2.1 The transition is under way, but emissions reductions must scale up rapidly

Australia has made progress in reducing national emissions but achieving the 2030 and 2035 targets will require a substantial and sustained acceleration. Emissions for the year to June 2026 fell by 6 Mt CO_2-e, after falling by an average of 4 Mt CO_2-e per year in the 10 years to 2026.

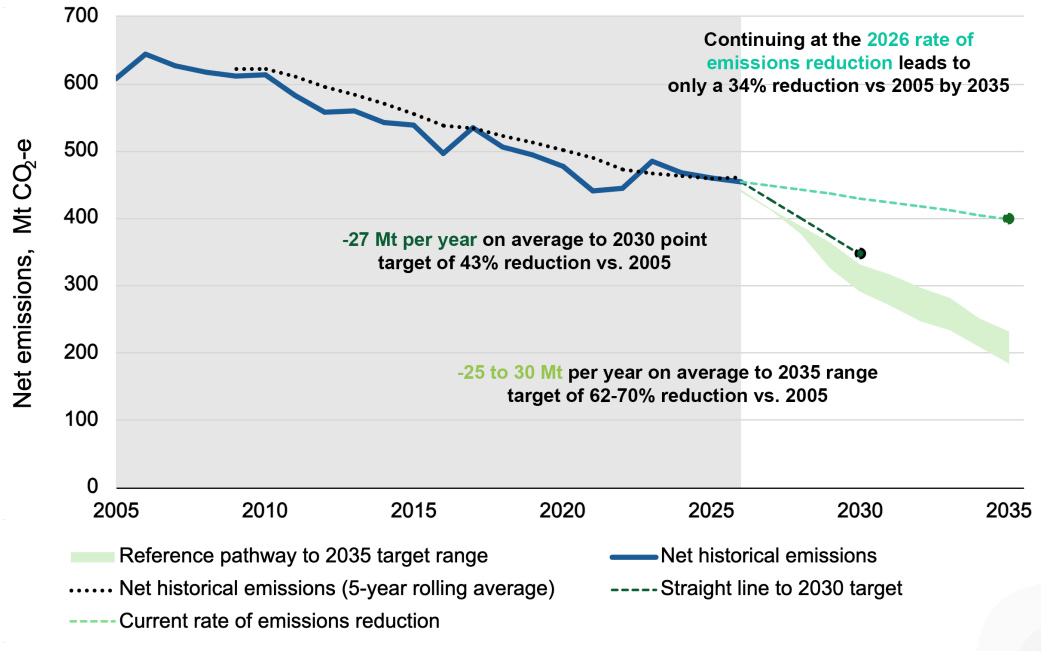
To meet Australia's 2030 target of cutting emissions by 43% from 2005 levels, emissions must fall by an average of 27 Mt CO_2-e per year. To achieve the more ambitious 70% end of Australia's 2035 emissions reduction target range, the annual rate of emissions reductions needs to increase to an average of 30 Mt CO_2-e over the next 9 years (see **Figure 1** below).

Australia's targets remain achievable, supported by a substantial policy framework and growing investment in clean technologies. Large-scale solar projects reaching final investment decision totalled 1.8 GW in the June quarter of 2026, the strongest quarter on record (CER, 2026k), and rooftop solar installations reached a quarterly record of 1 GW over the same period (CER, 2026l). Household battery capacity more than doubled in the first 9 months of 2026 (DCCEEW, 2026t), and electric vehicles, including plug-in hybrids, accounted for more than one-third of new car sales in September, more than double their share a year earlier (Hayward, 2026).

These developments demonstrate growing momentum, but investment and technology uptake must translate into sustained, economy-wide emissions reductions. Timely and effective implementation of existing policies, alongside further action to address barriers to deployment, will be essential to keeping Australia's targets within reach.

The Authority's 2024 Sector Pathways Review and 2035 Targets Advice published last year set out pathways to achieve Australia's emissions reduction targets. This report summarises the latest assessment of progress across the economy and opportunities to accelerate emissions reductions towards the 2030 and 2035 targets, with sectoral snapshots provided in Chapter 5.

Figure 1: Australia's historical, business as usual and target-aligned decarbonisation rates[2]



Source: Authority analysis of DCCEEW, 2026q

2.2 We need to triple the pace of the renewable energy rollout

The rollout of renewable energy generation has continued to drive progress in decarbonising Australia's electricity and other sectors. Australia already has a pipeline of enough large-scale renewable projects to reach the 82% by 2030 target (AEMO, 2025a). However, the pace of deployment will need an unprecedented uplift to meet the 82% target. Over the next 4 years, Australia must add an average of 9.5 GW per year of large-scale wind and solar capacity (IEEFA, 2026a). Large-scale renewable capacity added nationally in 2025-26 was 2.9 GW[3] (CER, 2026i). However, investment has picked up, with a record 5 GW of large-scale renewable projects reaching final investment decision in the year to September 2026 (CER, 2026j).

Renewables have increased their contribution to on-grid electricity supply over the past 12 months, from 40% to an estimated 44% in FY2026 (DCCEEW, 2026b; CCA analysis of Open Electricity, 2026b). Electricity sector emissions are down 4% (5.4 Mt CO_2-e) in the year to June 2026 (DCCEEW, 2026q). Existing policy measures are building momentum, including:

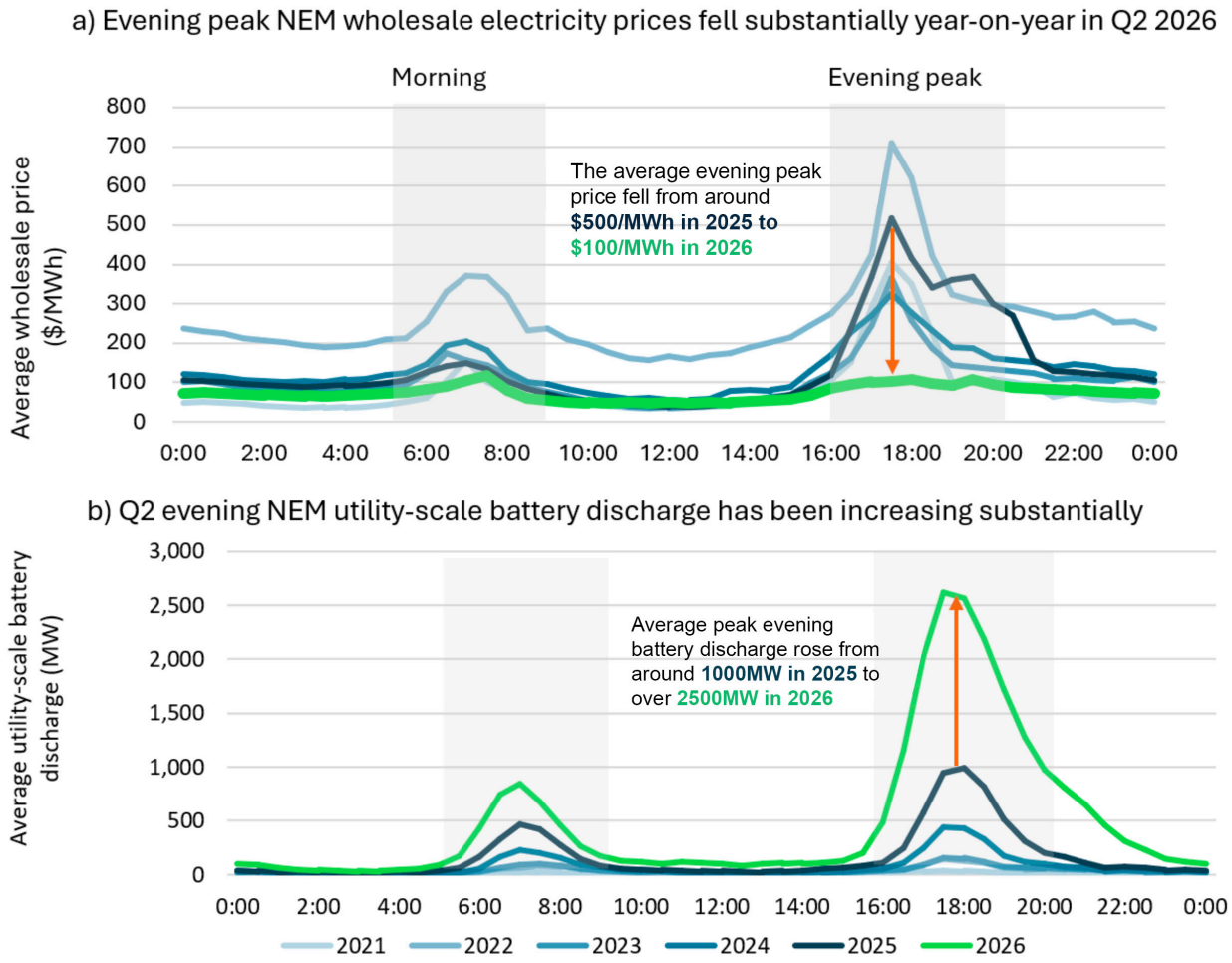
- the Capacity Investment Scheme
- the Cheaper Home Battery Program
- expansion of the Small-scale Renewable Energy Scheme to include commercial and industrial properties.[4]

Growth in renewable energy is needed to keep prices down, with most of Australia's existing coal-fired generators due to retire by 2035 and becoming less dependable as they age (AEMO, 2026a; Baringa, 2024). Having insufficient replacement capacity or delays to transmission deployment could increase costs and reliability risks, make coal exits more disorderly and slow emissions reductions throughout the economy.

Accelerating battery uptake is supporting the growth in renewable generation and is helping lower wholesale electricity prices. Average wholesale spot prices in the National Electricity Market fell 12% year-on-year in the first quarter of 2026 (AEMO, 2026d) and 47% in the second quarter, reaching their lowest second-quarter average since 2020 (AEMO, 2026e). Most of the price decline was from reduced evening peak prices, while daytime prices remained relatively unchanged (**Figure 2(a)**). Significant increases in evening discharge from utility-scale batteries (**Figure 2(b)**), reduced evening demand due to more households with batteries, and warmer weather reducing residential heating demand contributed to the fall (AEMO, 2026e).

2. Updated Land sector estimates for 2023 and 2024 reflecting the transition out of a prolonged La Niña period in 2020, 2021 and 2022 were published in Australia's National Inventory Report 2024. These lead to more gradual historical rates of emissions reductions and steeper required rates to 2030.
3. Includes accredited capacity for 2025-26 that was approved by end of September 2026. This may exclude some capacity that commenced but was not yet approved for accreditation by that date.
4. This was a recommendation the Authority made to the Government in its report *Unlocking Australia's clean energy potential (CCA, 2025d)*

Figure 2: National Electricity Market wholesale electricity prices and battery discharge, second quarter



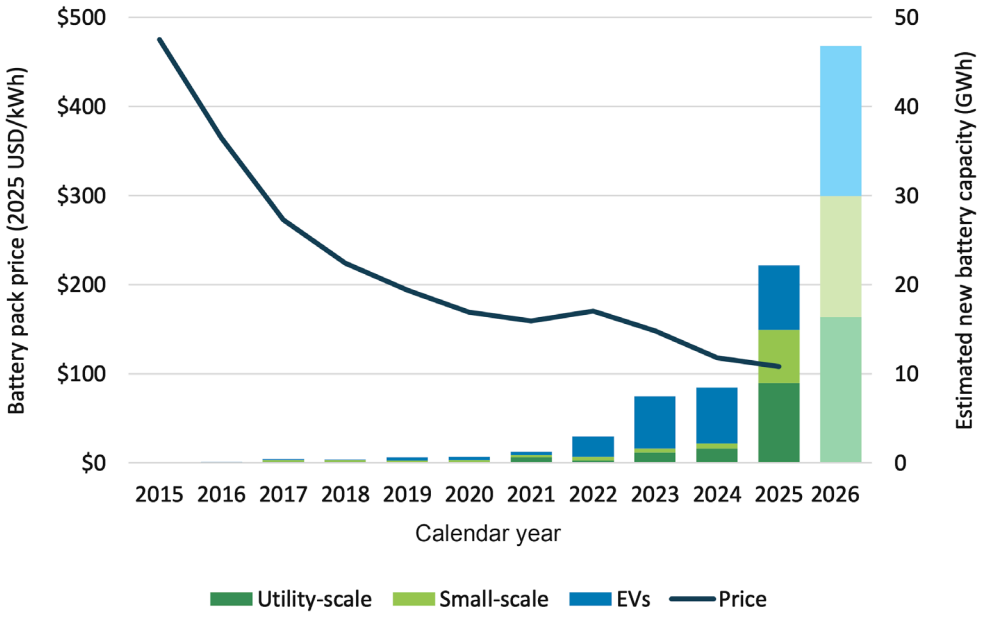
Source: Authority analysis of AEMO, 2022, 2023, 2024, 2025b, 2026d; Open Electricity 2026b

Significant falls in battery prices are enabling this growth in storage and uptake of electric vehicles. Global average battery pack prices fell by 77% between 2015 and 2025 (**Figure 3**) (BNEF, 2025a). Estimated new battery additions in Australia reached almost 22 GWh in 2025 across utility-scale storage, small-scale storage and battery electric vehicles, compared with less than 1 GWh in 2020 (**Figure 3**). In 2025, new additions of small-scale batteries were 11 times larger than in 2024 and new additions of utility scale were 5.7 times larger (BNEF, 2026b).

Small-scale battery uptake accelerated further in 2026 supported by the Government's Cheaper Home Batteries Program. Australians added 8.4 GWh of small-scale battery capacity under the Cheaper Home Batteries Program in the first half of 2026 (CER, 2026j), more than 4 times the small-scale capacity forecast made just a year earlier for the whole of 2026 (BNEF, 2025b).[5]

5. New small scale battery capacity reported in the first half of 2026 are batteries installed and approved under the Cheaper Home Batteries Program, and may differ to data used by Bloomberg New Energy Finance in their forecasts.

Figure 3: Average battery pack prices and uptake of batteries in utility-scale, small-scale storage and electric vehicles

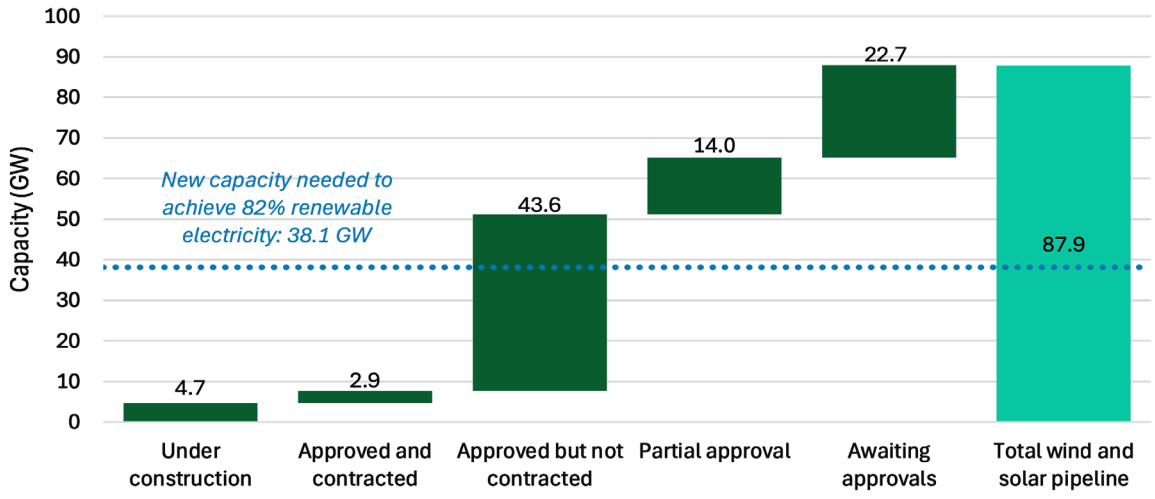


Source: Authority analysis of BNEF, 2025a, 2026b; FCAI and EVC via EVDB, 2026

Notes: (1) 2026 stationary battery additions are from BNEF (2026b), including reported installations and forecast additions. (2) BEV battery capacity is estimated from BEV sales, assuming an average battery size of 70 kWh per vehicle, based on the 2025 EU average (IEA, 2026b). (3) 2026 EVs sales comprise actual sales up to September and estimated sales for October-December. PHEVs are excluded.

Enough renewable energy projects already have approval for Australia to reach its 2030 target of 82% renewable electricity, but very few have begun construction. Analysis by IEEFA and Green Energy Markets found that a total of 87.9 GW of large scale solar and wind projects are in the national development pipeline, with an estimated 38.1 GW[6] of these needed to achieve its 2030 target of 82% renewable electricity. As of June 2026, only 12% (4.7 GW) of the capacity required to meet the 2030 target was under construction (IEEFA, 2026a). A further 43.6 GW of projects are approved for development but have not yet begun construction due to a lack of long-term customer contracts. Another 36.7 GW of projects await planning or environmental approvals (see **Figure 4**).

Figure 4: National pipeline of wind and solar projects 'In development' according to their approval, contract, or construction status



Source: IEEFA, 2026a

6. Equivalent to adding an average of 9.5 GW per year of large-scale wind and solar capacity, each year through to 2030.

Governments, industry and regulators must continue to address the market, regulatory, and infrastructure challenges slowing the delivery of more renewable energy generation (CCA, 2025a, 2025d). Timely implementation of reforms to improve revenue certainty would reinforce existing momentum. Improved social licence and policy stability would help speed up the rollout of renewable energy and transmission infrastructure (CCA, 2025a; CEIG, 2026). Informed debate and accurate information are also essential for a successful energy transition (see **Box 1**).

As electricity demand grows, Australia must maintain momentum. While the scale of demand growth is uncertain, drivers include electrification of households, industry and transport, data centre growth, and green commodity production (AEMO, 2026c). This would be offset to some extent by rooftop solar and battery storage uptake, and energy efficiency improvements (AEMO, 2026b).

Box 1: Misinformation: Why informed public debate matters for the energy shift

'Misinformation' is used here as an umbrella term for misinformation (unintentionally false), disinformation (intentionally false) and malinformation (true information used with the intent to mislead).

Concerns about energy affordability, reliability, local impacts and fairness are legitimate and important parts of public debate. Informed disagreement and debate are a healthy part of a democratic society and help test policies and improve decision-making. Effective climate policy depends on communities having access to accurate information and opportunities to engage with the evidence. Supporting informed, evidence-based discussion helps communities make informed decisions and strengthens confidence in democratic process.

Climate and energy misinformation can increase uncertainty, amplify mistrust and distort public understanding of climate and energy issues, making informed debate and democratic decision-making more difficult (OECD, 2024; Roberts et al., 2025). Misinformation can particularly shape attitudes and behaviour among people who have not yet formed strong views on climate and energy issues (CCA, 2026c). By increasing confusion and magnifying mistrust, misinformation can make it harder for communities to evaluate competing claims, participate in informed debate and engage constructively on climate and energy issues (Select Committee on Information Integrity on Climate Change and Energy, 2026).

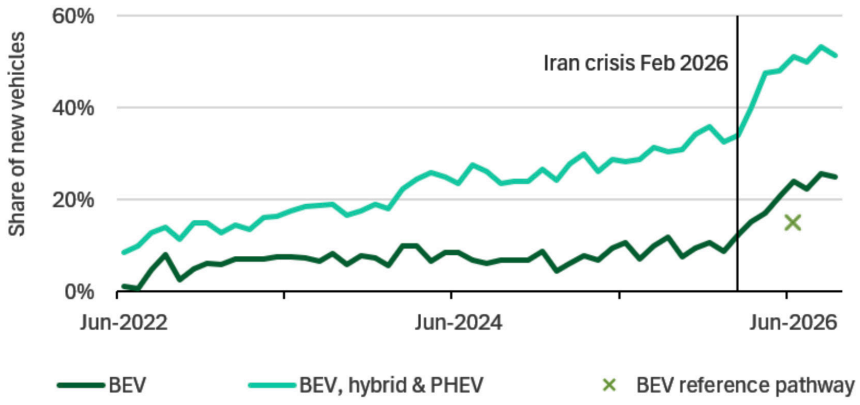
Public support for the clean energy transition remains stronger than many people believe (Andre et al., 2024; Poruschi et al., 2024). Research by 89 Degrees East found that 70% of Australians support the energy transition (89 Degrees East, 2026). However, while 44% of Australia's on-grid electricity comes from renewables, most Australians think the figure is 30% or less (CESI, 2025; DCCEEW, 2026b; CCA analysis of Open Electricity, 2026a). While concerns about costs, reliability and local impacts are important parts of the public conversation, amplification of opposing voices can create a misleading impression of how widely support is shared (Andre et al., 2024; Select Committee on Information Integrity on Climate Change and Energy, 2026).

Trusted local engagement is often more effective than facts alone. Research shows that people often interpret climate information through the lens of their existing identities, values and beliefs (Ebrahimi, 2025). Communication works best when it responds to local concerns and priorities, and is delivered by trusted peers and community voices (DCCEEW, 2024c; MacInnes et al., 2026). There are opportunities for governments to partner with trusted local voices, improve access to clear, accurate information, and support informed community participation in the energy shift (CCA, 2026c).

2.3 EV uptake has more than doubled since 2025 and charging infrastructure needs to keep pace

Electric vehicle (EV) sales experienced significant growth over the past 12 months, with increased concern about fuel prices, and the New Vehicle Efficiency Standard (NVES) accelerating the technology shift (see **Box 2**). This has helped reduce emissions from light vehicles and flatten emissions from the transport sector. Battery electric and plug-in hybrid vehicles accounted for more than a quarter – 29% – of new light vehicle sales in 2026 (year to September). This is an increase from 2025, when battery electric and plug-in hybrid vehicles accounted for 13% of new light vehicle sales (Authority analysis of FCAI and EVC via EVDB, 2026) (see **Figure 5**).

Figure 5: EV sales, 2022–2026



Source: Authority analysis of FCAI and EVC via EVDB (2026)

Note: The 'BEV reference pathway' was a previously estimated share of battery electric vehicles (BEVs) in sales for the 2026 calendar year, based on NVES limits.

This growth in EV uptake also provides health, wellbeing, and economic benefits for Australians, while increasing energy security by reducing demand for imported fuels. Fewer internal combustion engine cars on the road means less noise and air pollution (Australian Government, 2024a). EV drivers can also save up to $1,400 per year in fuel and maintenance costs (AEMC, 2025a).

Governments need to ensure public charging infrastructure continues to expand to sustain EV growth and maximise benefits for Australians. Many Australians can charge their EVs at home due to the large share of freestanding homes and off-street parking (Australian Government, 2024b). Nevertheless, rapid EV uptake is leading to some challenges in public charging during peak demand periods, and for those living in high-density arrangements or regional areas with limited access to public charging (Australian Automotive Dealer Association submission (APA), 2026). This means that, while Australia may not require the same ratio of public chargers to EVs as other similar countries (Lim, 2026), more are still needed. In 2024, Australia had around one public charging location for every 41 EVs, compared with a global average of one for every 11 (IEA, 2026a). The ratio has since worsened to one public charging location for every 125 EVs in Australia, or one public charging point for every 61 EVs, as of September 2026 (CCA analysis of EcoMovement data, 2026; BITRE, 2025).

The Government should continue to monitor the rollout rate, location, accessibility and reliability of charging infrastructure – and take action to ensure it meets the needs of a rapidly growing EV fleet. The National Electric Vehicle Charging Network aims to address charging gaps via a national highway fast charging network (DCCEEW, 2023b). However, complex grid connections, planning requirements, high installation costs, and network augmentation delays have hampered delivery (IEA, 2026a). In October 2026, the Australian Energy Regulator (AER) approved a limited trial of 100 kerbside EV chargers in Victoria to test how EV charging can support the electricity grid while protecting market competition (AER, 2026a). Such kerbside EV charging could expand the accessibility and distribution of EV chargers in Australia. Governments and the private sector should continue to focus on identifying and delivering on charging needs for high density and regional areas and overcoming delivery challenges (DCCEEW, 2026a).

Box 2: Sustaining strong NVES limits beyond 2029 can set Australia up for lower energy bills and emissions, and greater resilience

The NVES is helping lower vehicle running costs and emissions while strengthening Australia's energy security. It increases motorists' choice of vehicles by encouraging suppliers to offer and sell more efficient and zero-emissions vehicles. The NVES achieves this by setting a target for the average emissions intensity of the new light vehicles each supplier brings to the Australian market each year (Australian Government, 2024). With the current headline limits ending in 2029, the Government should use its current review of the standard to chart an ambitious path from 2030.

Australia's own experience demonstrates the impacts of delaying strong vehicle efficiency policies. In 2014, the Authority recommended a light vehicle emissions intensity standard, but the NVES did not commence until 2025 (CCA, 2014). Had the Authority's recommendation been adopted, a standard could have commenced in 2018, and by 2025 Australian motorists could have avoided around $3 billion in petrol and diesel costs.[7] In 2025, the annual petrol savings alone would have equated to around 25 days of Australia's petrol consumption, similar to the petrol component of Australia's National Stockholding Obligation. Saving this amount of petrol would have made Australia better positioned to deal with the global fuel shock arising from the Middle East conflict. In addition, emissions from Australia's light vehicle fleet in 2025 could have been around 7% lower.

Ambitious limits increase the availability of vehicles with lower running costs, including more efficient conventional and hybrid vehicles, and more battery electric vehicles (BEVs). Since the NVES commenced, the number of available EV and plug-in hybrid EV models increased from around 160 in July 2025 to around 220 in July 2026 (unpublished DCCEEW analysis of Blue Flag Vehicle Database (2026)). In that time, the number of models under $40,000 increased from 7 to around 20. BEVs can already have lower lifetime costs than fossil fuel powered vehicles (IEA, 2025c). By 2030, BloombergNEF projects EVs could be cheaper to purchase in most segments and markets, partly due to falling battery costs (BNEF, 2026a).

Future limits should ensure light vehicle emissions make an ambitious and achievable contribution to Australia's emissions reduction targets. The Authority's 2035 Targets Advice found that electric vehicles could account for almost half of new vehicle sales over the decade to 2035, as part of economy-wide action to achieve a 62-70% target (CCA, 2025b). Strong limits for the early 2030s would also position Australia well to meet its 2050 net zero target, given the relatively slow turnover of the vehicle fleet: around 45% of light vehicles currently remain on the road 20 years after sale (Authority analysis of ABS, 2019a, 2020, 2021).[8] If these trends continue, some non-zero emission vehicles sold in the 2030s would still be emitting in 2050, increasing the emissions removals needed to achieve and maintain net zero. The Authority will provide further input through the Government's forthcoming NVES review consultation.

7. Authority illustrative analysis of the difference between observed new light vehicle emissions intensity (NTC, 2025) and the Authority's recommended 2014 trajectory. Analysis accounts for vehicle sales (FCAI and EVC reports), estimated vehicle survival and distance travelled (ABS, 2019b). Liquid fuel is assumed to be $1.80 per litre (AIP, 2026). Electricity costs are not considered because modelling for the original standard suggested electricity would make up a very small share of total vehicle energy consumption in 2025 (Reedman and Graham, 2013).
8. Estimate based on vehicle survival curves estimated from changes in registrations by age using ABS vehicle registration data for 2018–2021.

2.4 Equitable access to household electrification can help with energy costs

While Australian households are steadily electrifying, governments have an important role in helping ensure that all cohorts can equitably access these opportunities. Household solar and battery uptake have continued to rise over the past 12 months, supported by Australian Government programs such as the Cheaper Home Battery Program and Small-scale Renewable Energy Scheme (ACCC, 2026a; CEC, 2026a). Yet many renters and low-income households cannot electrify their home due to split incentives between landlords and renters, and high upfront costs (ECA, 2026; Economics References Committee, 2025; GBCA submission (EP), 2026).

The Government should continue to work with states and territories to support these cohorts to access low-emissions technologies. This would deliver significant co-benefits for households (CEC, 2026c; ECA, 2026; Economics References Committee, 2025). Households could cut their energy bills by up to 90% over time and save between $4,400-$4,900[9] per annum by adopting solar, batteries, electric appliances and an electric vehicle (AEMC, 2025c). More affordable heating and cooling could also deliver health co-benefits (ECA, 2026).

The Government recently announced the expansion of the Social Housing Energy Performance Initiative (SHEPI) to improve the energy performance and thermal comfort of social housing. The $1.1 billion initiative (with $800 million in Australian Government funding) is delivered in partnership with states and territories and provides social housing tenants access to home upgrades like draught sealing, electric appliances, solar panels and batteries (DCCEEW, 2026x). The Government should continue to invest in initiatives like this to enable fairer household electrification.

2.5 Monitor land-use change and pressures as demands for land evolve

Through its 2026 review of the ACCU Scheme, the Authority heard stakeholder concerns that ACCU projects were competing with land used for agricultural production, with resulting adverse impacts on regional communities (e.g. Australian Dairy Farmers/Dairy Australia (ACCU), 2025). The Authority's analysis found that only 3% of the existing ACCU project area is on land used for irrigated or intensive agricultural production (CCA, 2026a).[10] However, demand for land-based sequestration will need to increase, as published pathways to net zero, including the Authority's own targets advice, anticipate increasing levels of land-based sequestration to offset residual emissions (CCA, 2024b, 2025b). New policies will be required to drive the levels of land-based sequestration required.

Other land-use pressures will also continue to increase through the climate transition. These may include renewable energy and transmission infrastructure, biodiversity markets, urban development, expanded forestry and reforestation activities. Previous reviews and reports have highlighted concerns about the implications of these activities for productive agricultural land, regional communities and food security (CCA, 2024b, 2025a; Productivity Commission, 2025). Demand for biomass feedstocks from the developing low-carbon liquid fuels industry has been noted by some stakeholders as potentially increasing competition for some agricultural commodities, which may impact food affordability and security (DAFF, 2026).

Climate change is likely to exacerbate these land-use pressures by reducing the productivity of agricultural land in some regions. Increasing rainfall variability, extreme heat and the incidence of extreme events are likely to lower yields and reduce agricultural productivity across many parts of Australia (ACS, 2026b; BOM, n.d.). This may increase competition for productive land and influence future land-use decisions.

Changing climate and market conditions will shape future land use. Landholders will decide whether to undertake ACCU projects, host renewable energy or pursue other opportunities. Many activities, including soil carbon projects and agrivoltaic solar systems, can complement existing farming operations. They can diversify farm income, support productivity and improve resilience to changing market and climate conditions (ABARES, 2026; Carbon Market Institute, 2025; CEC, 2021; FCA, 2026; Whittle et al., 2025).

Ensuring the right policies are in place will help realise these benefits, achieve the required level of carbon sequestration, and minimise unintended impacts on regional communities during the transition. This includes meaningful engagement with affected communities and appropriate benefit-sharing arrangements to build social licence and

9. This figure represents the upper and lower sum of savings from installing electric vehicles, gas appliance electrification, solar panels and home batteries. AEMC defines household costs as 'the sum of petrol costs, usage and daily supply costs for electricity and gas, minus any electricity export revenue.' The average cost savings modelled are for a 3-person household with 3-star energy efficiency rating, installing a 10 kW solar and 15 kWh battery system. AEMC's Residential Electricity Price Trends 2025 outlines more information on how these costings were calculated (AEMC, 2025c, 2025b).
10. ACCU 'project areas' do not necessarily represent land taken out of agricultural production. Often only part of a registered project area actively contributes to carbon abatement. Also, some activities, such as soil carbon projects, do not exclude agricultural production.

support better outcomes for both communities and project proponents (CCA, 2024b, 2025a; Productivity Commission, 2025).

The Authority will continue to strengthen our evidence base on land-use pressures, their drivers and implications for emissions reduction, sequestration and agricultural production. This work will inform future Annual Progress Advice and the development of the Authority's evidence platform. Many of the issues affecting land-use extend beyond climate policy alone. We will work with governments, industry, researchers and others to better understand these issues and identify where we can add value. We will prioritise engagement with First Nations stakeholders, recognising their role in Caring for Country and managing Australia's landscapes.

2.6 Invest in climate adaptation to protect economic productivity, lower costs and support communities

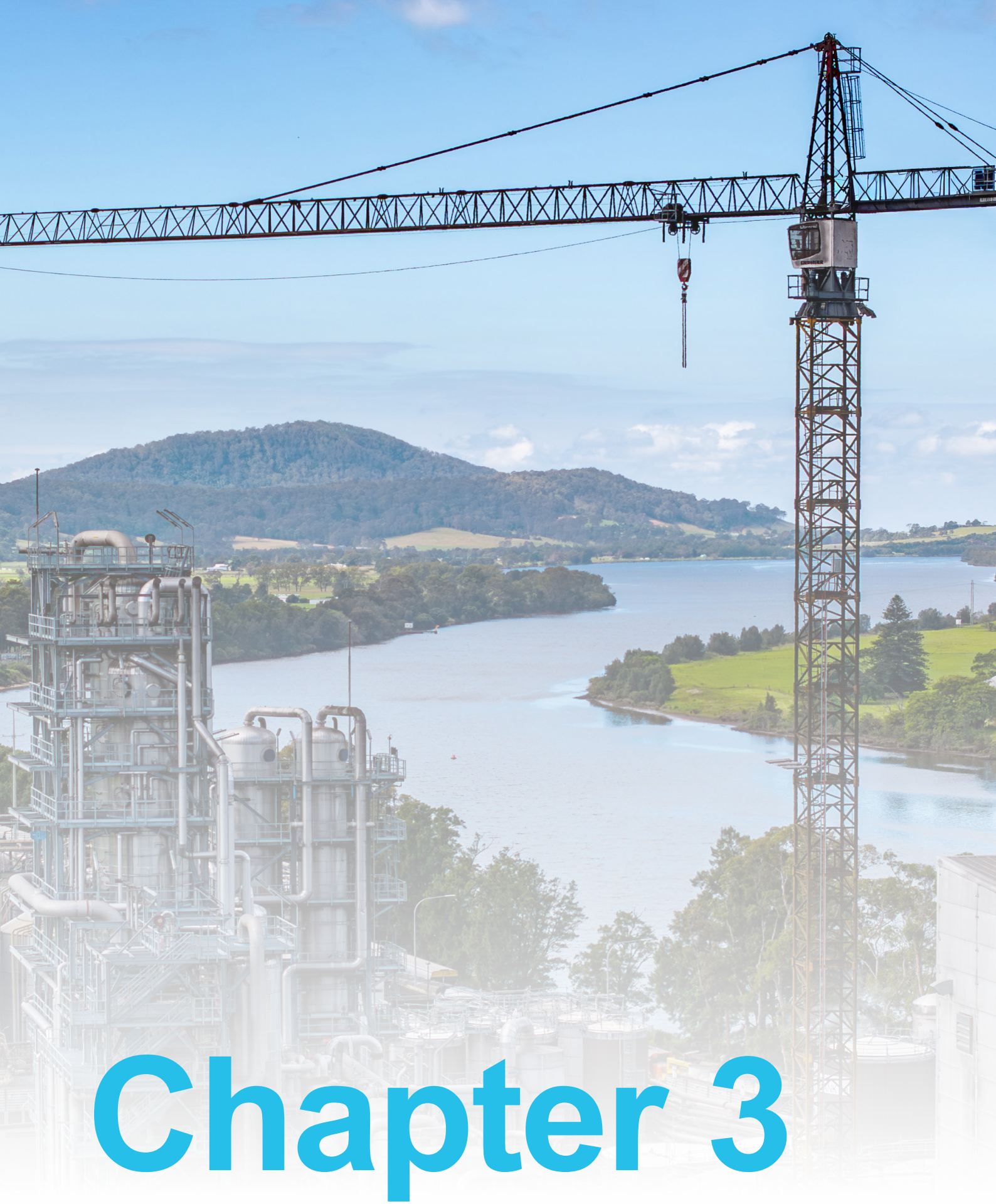
Australia cannot avoid all climate impacts, but it can be far better prepared for them by investing in climate adaptation and resilience measures. The recent United Nations Environment Programme's (UNEP) overshoot report finds average global temperatures are likely to exceed 1.5 °C within the next few years (UNEP, 2026b). Strengthening disaster risk reduction and climate adaptation is essential to protect communities, sustain economic productivity and reduce the growing costs of climate impacts. The Government laid important foundations in 2025 through the National Adaptation Plan and National Climate Risk Assessment (ACS, 2025; DCCEEW, 2025b). At the time of writing, the Government will soon be releasing an Adaptation Action Agenda to detail future steps. The challenge now is to turn these foundations into funded, on-the-ground action.

Strengthening climate adaptation efforts now will substantially reduce impacts to the economy and make Australian communities more resilient to a changing climate. Investment in proactive disaster risk reduction can deliver up to 10 times the savings in post-disaster recovery costs (CCA, 2025c; CSIRO, 2021).

Building resilience to the impacts of climate change also requires accurate, reliable and well-communicated climate information. This information supports local governments, businesses, communities, and households to make informed choices about infrastructure, planning, and investment. Australia already has robust climate science and modelling capabilities, but the current system is becoming fragmented and under-resourced (AAS, 2025; Haymet, 2026). Declining investment in climate science further jeopardises Australia's climate risk capability.

Strengthening the links between climate science, climate risk services, and decision-making will further help Australia better manage current and future climate-related risks. In support of this goal, we have been working with Commonwealth agencies to better clarify roles and responsibilities across the climate information system and identify opportunities for stronger collaboration. The Australian Climate Service also recently released its 3-year strategy, focused on better meeting climate risk data needs and better supporting climate resilience and disaster risk reduction (ACS, 2026a).

The Authority will continue to monitor progress on climate adaptation and resilience over coming years.



Chapter 3

Safeguard Mechanism

Chapter 3 key points

The Authority recommends high-ambition post-2030 Safeguard settings comprising:

- **A 70%-aligned emissions budget and decline rate for 2031 to 2035.** This represents a proportional contribution from Safeguard facilities to achieving the upper end of Australia's 2035 target range.
- **Continued compliance flexibility at this time.** Access to ACCUs and SMCs allows facilities to meet that ambitious emissions task at reasonable cost, including where on-site abatement is not yet practical or cost-effective, and provides policy continuity to support long-term investment.
- **Targeted measures to increase on-site abatement.** These measures directly address barriers, including to fossil methane abatement, that changes to the Safeguard price incentive would not resolve.
- **Refined trade-exposed baseline-adjusted arrangements.** These better manage material carbon leakage risks and distribute the costs of the stronger emissions task more equitably.
- **A revised timetable for the Annual Progress Advice.** This allows the Authority to use complete compliance data when assessing Safeguard performance.

Based on the latest available evidence, the Safeguard Mechanism is meeting its legislated net and gross emissions outcomes. The Authority will continue to assess the on-site response and the policy settings affecting it. The Authority's 2028 review of the National Greenhouse and Energy Reporting Scheme provides an opportunity to consider whether further targeted measures or changes to ACCU use are warranted.

The Safeguard Mechanism places net emissions limits on Australia's largest industrial facilities. 'Net' limits mean facilities can meet their obligations by reducing their own (on-site) emissions, or by purchasing credits from other facilities or from emissions reduction projects elsewhere in the economy. The limits decline each year, encouraging greater emissions reductions over time.

The Authority is required to assess the Safeguard's performance against its legislated goals each year. Section 3.1 provides this assessment, finding the Safeguard Mechanism is meeting its legislated net and gross emissions outcomes.

This year, the Authority is also providing input to the Government's 2026–27 Review of the Safeguard Mechanism, to inform policy settings for the 2031 to 2035 period[11]. In particular, the Authority has assessed the appropriate baseline decline rate for the 2031 to 2035 period and the extent to which the 2023 reforms are driving on-site abatement, including whether additional incentives are required or limits on ACCU use may be appropriate.

Section 3.2 examines evidence of the Safeguard's effect on on-site abatement to date. The analysis finds early signs of investment in on-site abatement but concludes that the full response is still emerging. Assessing the Safeguard's impact will remain challenging because many factors influence facilities' emissions and investment decisions.

Safeguard policy settings work together as a package. The emissions budget sets the aggregate ambition, and the baseline decline rate is calibrated to deliver that budget. Access to ACCUs and SMCs, together with other flexibility arrangements, influences how facilities meet their obligations, including the balance between reducing emissions on site and financing emissions reductions elsewhere by purchasing and surrendering credits.

Section 3.3 presents the case for the Authority's recommended 70%-aligned emissions budget and baseline decline rate. This would see Safeguard facilities make a proportional contribution to the upper end of Australia's 2035 target range. Recognising that many Safeguard facilities are in 'hard to abate' sectors, section 3.4 sets out why it is appropriate to retain compliance flexibility at this time. Access to ACCUs and SMCs means Safeguard ambition need not be constrained by what facilities can do on site. The Authority's judgement is that, at this time, the Government should retain ACCU flexibility and use targeted measures to increase feasible on-site abatement.

Equity is also an important consideration, given that a more ambitious decline rate would increase the required net emissions reductions and compliance costs for Safeguard facilities. Section 3.5 outlines how the Safeguard Mechanism's settings for trade exposed facilities can ensure a more equitable

11. Unless otherwise specified, references to years in relation to Safeguard data, emissions targets, emissions data, emissions projections, and modelling data are to financial years ending 30 June. For example, 2026 refers to the financial year ending 30 June 2026.

distribution of compliance costs and address carbon leakage risks whilst supporting a 70%-aligned emissions budget.

On-site abatement supports Australia's emissions targets and the transition to competitive, low-emissions industries. Direct industrial abatement will need to increase as technologies mature, enabling infrastructure is delivered and assets are replaced. Near-term opportunities include electrification and renewable electricity, fossil methane abatement, alternative fuels and more efficient industrial equipment. Many projects also depend on infrastructure, planning, technical development or coordination that a stronger Safeguard Mechanism price signal would not provide on its own. Section 3.6 identifies targeted measures that could help bring forward feasible abatement while retaining compliance flexibility across the scheme.

The Authority has focused its assessment of policy options against the principles of effectiveness, efficiency, equity and simplicity. These principles are consistent with those applied in the 2023 reforms. The Authority has also taken account of the broader statutory principles in the *Climate Change Authority Act 2011*. In practice, this means making recommendations that can deliver emissions reductions at reasonable cost, manage impacts across affected industries and avoid unnecessary complexity.

Stable and predictable policy settings are particularly important for capital-intensive projects with long lead times. This does not mean settings should remain unchanged regardless of their effects. The Authority will continue to assess on-site abatement and the wider policy settings affecting it. Section 3.7 recommends changing the timing of the Authority's annual advice, so the analysis is informed by more complete information, and to provide the Minister longer to prepare a more considered policy response.

The Safeguard is a key element of Australia's climate policy suite. It creates a direct financial incentive for industrial facilities to reduce emissions, which is expected to strengthen over time. The Safeguard is helping drive industry's transition to net zero, working alongside broader economic and industrial policies that promote innovation, development of new technologies and markets, and workforce capability. The Authority considered this broader policy ecosystem when developing its recommendations.

3.1 The Safeguard Mechanism remains consistent with its legislated emissions outcomes

The Authority has assessed Safeguard emissions and finds they are consistent with the legislated net and gross emissions outcomes. Net emissions are projected to remain below the cumulative emissions budget and the 2030 point target. The statutory gross emissions assessment, based on final data to 2025, also shows a decline in the relevant 5-year rolling average. Preliminary data show that annual gross emissions increased in 2026 compared to 2025; the final 2026 data will be taken into account in future assessments.

The *Climate Change Act 2022* requires the Authority to advise whether gross and net Safeguard emissions are declining consistently with the following outcomes set out in the *National Greenhouse and Energy Reporting Act 2007*:

- a cumulative net emissions[12] budget of no more than 1,233 Mt CO_2-e from 2021 to 2030 (outcome (b))
- net emissions of no more than 100 Mt CO_2-e in 2030 (outcome (c)(i))
- net zero Safeguard emissions after 2049 (outcome (c)(ii))
- a lower 5-year rolling average of gross emissions for each year after 2024 (outcome (d)).

The net emissions outcomes set the Safeguard's contribution to Australia's 2030 target. The cumulative budget limits total net emissions over the decade, while the 2030 point target limits net emissions in 2030.

The gross emissions outcome focuses on on-site emissions at Safeguard facilities and requires that they decline over time. The use of a rolling average recognises that annual emissions can be volatile, rising and falling with production, the commencement and closure of facilities, operating and market conditions and other factors. Because each facility's baseline adjusts with production, aggregate annual gross emissions may increase even while aggregate baselines and net emissions decline.

3.1.1 Net emissions are projected to remain below the cumulative budget and 2030 target

The Authority projects net Safeguard emissions to be 52 Mt CO_2-e below the cumulative 1,233 Mt CO_2-e target between 2021 and 2030, and 9 Mt CO_2-e below the 100 Mt CO_2-e point target in 2030 (**Table 1**).

12. Net emissions are calculated as gross emissions minus ACCUs and SMCs surrendered, plus ACCUs issued to Safeguard facilities. Preliminary findings assume exceedances are fully offset through surrender of carbon units.

The assessment accounts for expected emissions from new and expanded facilities and relevant estimates provided by the Minister for the Environment (**Table A4**). The 2026 assessment includes 54 new and expanded facilities that are covered, or could be covered, between 2024 and 2030 (these are 'new and expanded' since the commencement of the reforms). Their projected net emissions are 7 Mt CO_2-e in 2030 and 32 Mt CO_2-e cumulatively from 2024 to 2030.

Projected cumulative emissions between 2021 and 2030 from new facilities are 5 Mt CO_2-e lower than in the 2025 assessment, reflecting project delays and lower forecast production. In contrast, projected cumulative emissions from expanded facilities are 4 Mt CO_2-e higher than in the 2025 assessment (**Table 1**). The number of identified new and expanded facilities has fallen from 58 to 54, mainly because some projects have been delayed or revised.

The analysis of new and expanded facilities is at **Appendix A**.

Table 1. Assessment of net emissions outcomes

	2025		2026
	Preliminary	Final	Preliminary
Cumulative net emissions from 2021 to 2030 (Mt CO_2-e)			
Continuing facilities	1,158	1,159	1,149
New facilities	25	25	20
Expanded facilities	8	8	12
Total (compared to 1,233 Mt CO_2-e emissions budget)	**1,190**	**1,191**	**1,181**
Net emissions in 2030 (Mt CO_2-e)			
Continuing facilities	84		84
New facilities	6		4
Expanded facilities	2		3
Total (compared to 100 Mt CO_2-e point target)	**92**		**91**

Note: Totals may not sum due to rounding. A continuing facility is one that exceeded the Safeguard Mechanism emissions threshold of 100 kt CO_2-e per annum in any year between 2017 and 2023 and is continuing operations in 2026. A new facility is one that is covered by the Safeguard Mechanism for the first time from 2024 onwards. An expanded facility is a facility that has been covered by the Safeguard Mechanism previously and is carrying out an existing activity to a greater extent or beginning a new activity for the first time.

3.1.2 The 5-year rolling average of gross emissions has declined

Average annual gross emissions over the 2021 to 2025 period were 5.3 Mt CO_2-e (3.8%) lower than average gross emissions over the 2018 to 2022 period (**Figure 6**). This meets the legislated requirement for 5-year rolling average gross emissions to decline.

Preliminary data indicate that annual gross emissions increased by 0.5 Mt CO_2-e (0.4%) in 2026, after declining by 5.8 Mt CO_2-e over the first 2 years of the reformed Safeguard. This year's increase mainly reflects the emissions impact of large oil and gas facilities that started or restarted operations in 2026, which outweighed the decline from continuing facilities (those operating in both 2025 and 2026), and facilities leaving the scheme (CER, 2026c).

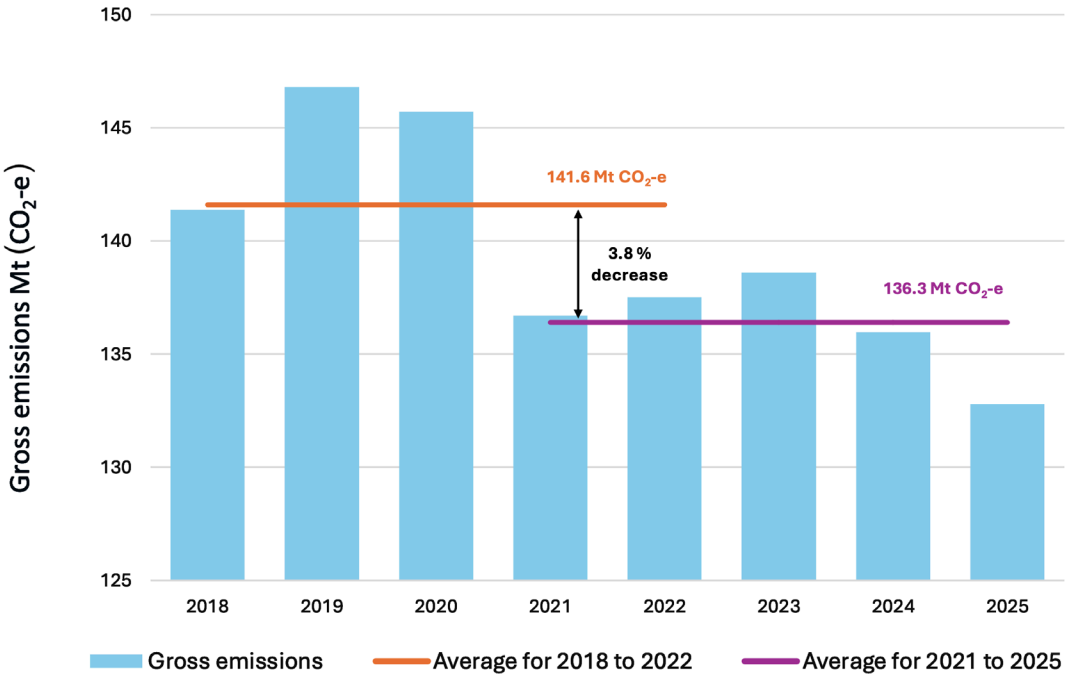
The rise therefore reflects changes in emissions covered by the Safeguard Mechanism, rather than an

overall increase among facilities covered in both years (CER, 2026c).

The Authority will assess the 5-year rolling average to 2026 in our 2027 Annual Progress Advice, using final compliance data.

The rolling average and annual results capture different aspects of Safeguard performance. Neither on its own shows the amount of on-site abatement delivered or the effect of the 2023 reforms. As noted above, annual gross emissions change for a variety of reasons. Section 3.2 provides a fuller assessment of on-site abatement.

Figure 6: Average gross emissions declined across the statutory comparison periods



Source: CCA analysis of CER unpublished National Greenhouse and Energy Reporting data 2026, and CCA analysis of CER historical Safeguard data 2026m

Note: The statutory comparison uses gross emissions data to 2025. Preliminary 2026 emissions are not included. Differences between gross emissions values published by the Authority and those published by the CER are due to the Authority using historical emissions that have been recalculated using the 100-year global warming potentials from the Intergovernmental Panel on Climate Change's Fifth Assessment Report (IPCC, 2013).

3.1.3 Preliminary data provide an incomplete picture

The Authority receives preliminary emissions data for Safeguard facilities shortly before the Annual Progress Advice is finalised each year. The Clean Energy Regulator (CER) has not completed its full quality assurance and the data do not yet reflect final baselines or facilities' final use of ACCUs, SMCs, borrowing, multi-year monitoring periods, TEBA adjustments and NGER report resubmissions. The CER will publish final compliance data in April 2027.

The Authority recommends changing the timing of the Annual Progress Advice to 30 June each year, as discussed in section 3.7. This would allow future assessments to use the final compliance data published in April and give the Minister more time to consider the Authority's advice before responding.

3.2 The reforms are strengthening incentives for on-site abatement, but their full effect is not yet clear

The Minister asked the Authority to assess the extent to which the 2023 reforms are driving on-site abatement. The Authority has considered the financial incentive created by the reforms, gross emissions, emissions intensity, known abatement projects and stakeholder evidence. These sources provide complementary evidence, but none can isolate the effect of the reforms on their own.

It is too early to assess the full impact of the reforms with confidence, but they have materially strengthened the financial incentive for facilities to

reduce emissions on site and are influencing some investment decisions. Aggregate baselines are now below, rather than well above, aggregate gross emissions. Average gross emissions have declined across the statutory comparison periods, and emissions intensity has improved in most industries.

However, only 2 years of final compliance data are available, and major projects can take years to deliver. The effect of the reforms will become clearer as baselines continue to decline, projects progress and further compliance data become available. The Authority will continue to monitor and report on progress each year.

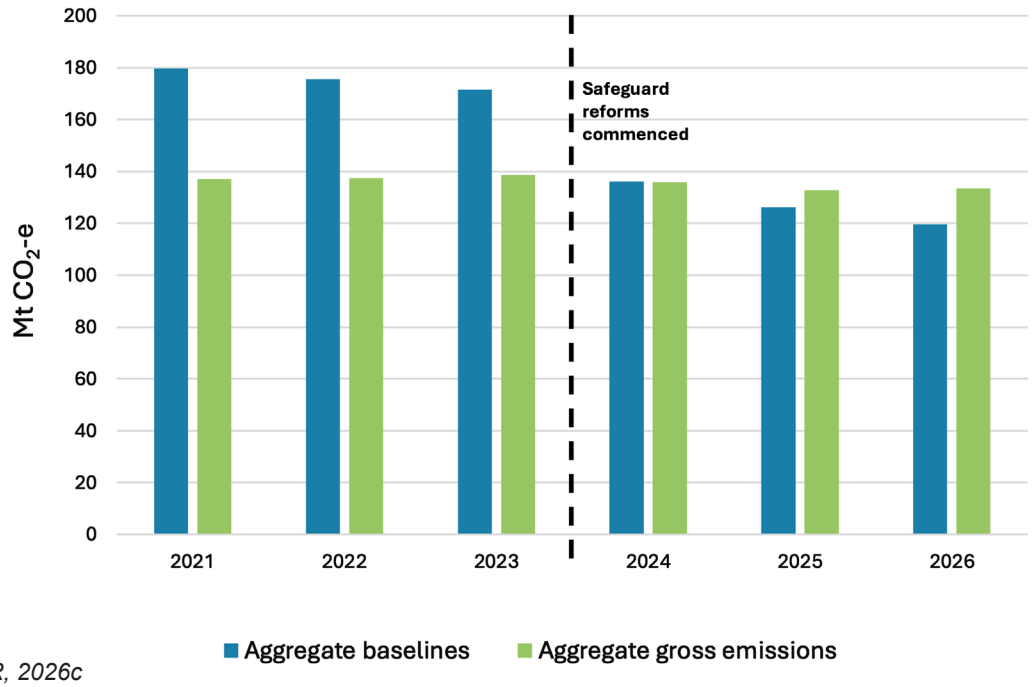
3.2.1 The 2023 reforms materially strengthened the incentive for on-site abatement

The Safeguard reforms have reset facilities' baselines. An annual decline rate now reduces baselines predictably and gradually over time on a trajectory consistent with achieving Australia's emissions reduction targets of 43% below 2005 levels by 2030 and net zero by 2050 (DCCEEW, 2024d). Declining baselines strengthen the financial incentive for each facility to reduce emissions, regardless of whether it is above or below its baseline. A facility with emissions above its baseline must surrender ACCUs or SMCs, or use another eligible flexibility arrangement. A facility with emissions below its baseline can generate SMCs and sell them to others, or bank them for use in future years. Reducing emissions on site can therefore reduce the number of credits it must buy or increase the number it can generate.

Facilities can choose how to meet their obligations. Where ACCUs or SMCs cost less than available on-site abatement, purchasing credits can deliver the same net emissions outcome at lower cost. If credits become less available or more expensive, the incentive for on-site action increases. The price of ACCUs was on average around $37 per tonne in the June quarter of 2026 (CER, 2026k).

Before the 2023 reforms, aggregate facility baselines were substantially higher than aggregate gross emissions. This gap, known as aggregate headroom, meant the Safeguard imposed little or no compliance obligation on most facilities, creating little or no incentive to abate. The 2023 reforms reset baselines to remove aggregate headroom, introduced an annual decline (**Figure 7**) and – importantly – introduced SMCs for below-baseline emissions. These changes materially strengthened the financial incentive for all facilities to reduce emissions.

Figure 7: The 2023 reforms removed aggregate headroom



Source: CER, 2026c

Note: 2026 emissions and baselines are preliminary.

Aggregate baselines are now below aggregate gross emissions. Safeguard facilities must collectively reduce emissions onsite or surrender credits backed by emissions reductions elsewhere to meet their net emissions obligations. As baselines continue to decline, the Safeguard will require progressively greater net emissions reductions.

Facilities face the same marginal incentive, but the costs and benefits of on-site abatement vary across facilities. Compliance costs for a facility depend on its baseline, production, emissions intensity, available technologies and access to compliance units. Removing aggregate headroom does not mean that every facility faces the same obligation or has the same capacity to reduce emissions on site.

Safeguard compliance costs are not the only factor influencing investment. A facility may invest in on-site abatement that costs more than credits if the project reduces exposure to uncertain future credit prices, aligns with planned asset replacement, or delivers other strategic business benefits. Conversely, a facility may use credits even where an on-site option has a lower marginal cost if uncertainty about future policy settings, operating requirements or the facility's remaining life weakens the case for capital investment.

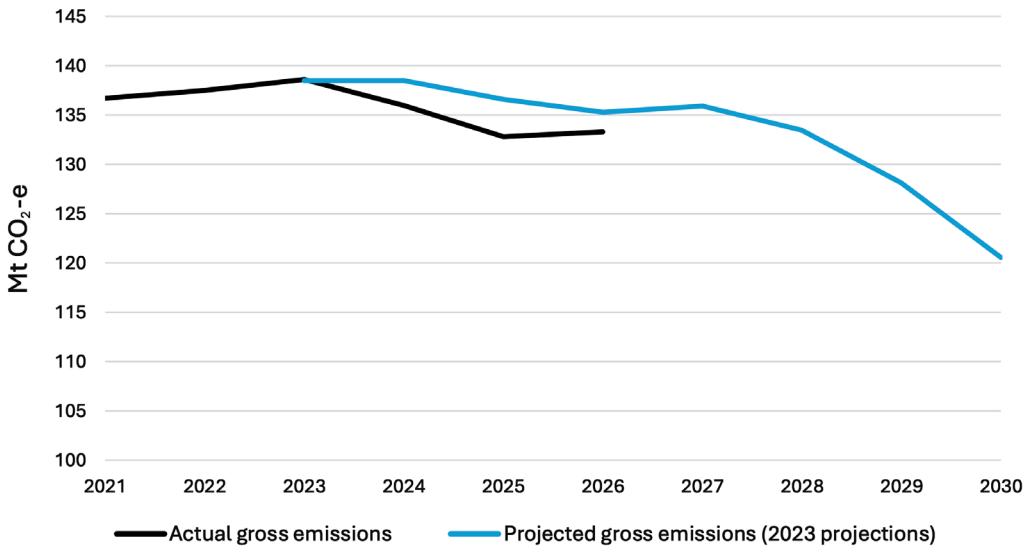
3.2.2 Gross emissions have tracked the path projected at the time of the reforms

As section 3.1 explains, gross emissions are one indicator of on-site change, but do not show how much abatement has occurred or whether the reforms caused it. Changes can also reflect production, new or closing facilities, resource characteristics and operating conditions. It is therefore useful to compare to a benchmark that takes these factors into account.

Australia's 2023 emissions projections anticipated that gross Safeguard emissions would change only modestly in the first years of the reforms, with larger reductions emerging over time (**Figure 8**). This is consistent with the long lead times for many industrial abatement projects.

Actual gross emissions have broadly tracked the projected path to date, despite the increase in 2026 (**Figure 8**). While circumstances have evolved since 2023, actual gross emissions remaining close to the projected path is consistent with the gradual emissions response anticipated when the reforms were introduced.

Figure 8: Gross Safeguard emissions have broadly tracked projections



Source: CER, 2026m; DCCEEW, 2023a; CCA analysis of CER unpublished National Greenhouse and Energy Reporting data 2026

Note: 2026 emissions are preliminary.

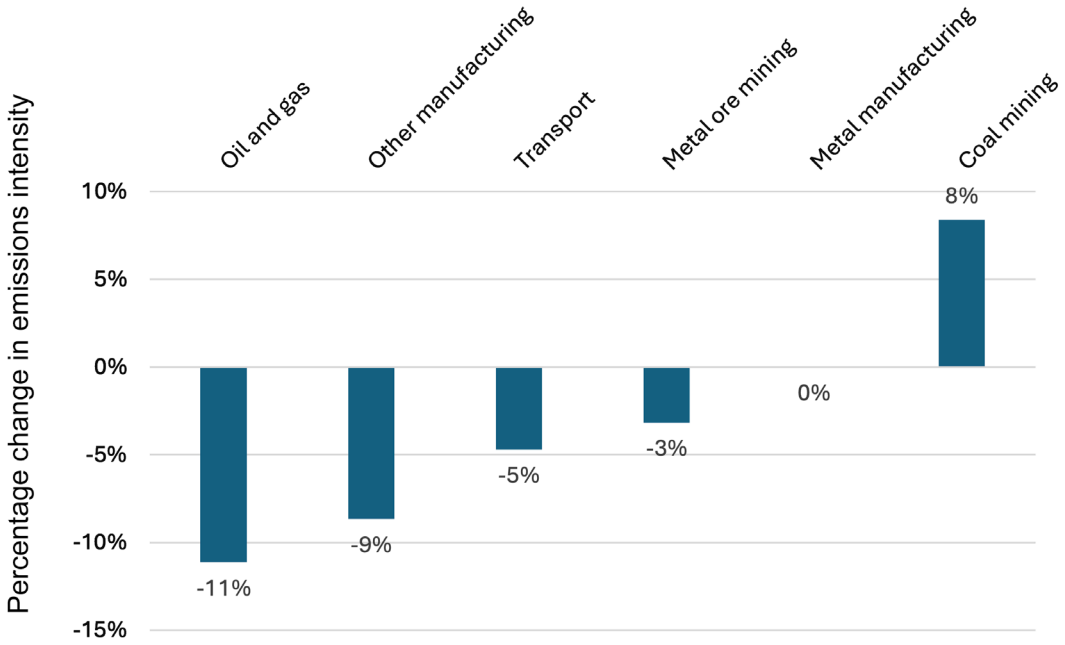
3.2.3 Emissions intensity fell in most industries

Emissions intensity is the amount of emissions produced for each unit of output (for example, emissions per MWh of electricity generated, or emissions per tonne of alumina produced).

It can provide information about changes in facility performance that is not apparent from gross emissions alone.

The Authority assessed changes in emissions intensity at the facility level. We found that emissions intensity has declined in most industries, was broadly unchanged in metal manufacturing, and was higher in coal mining[13] (**Figure 9**).

Figure 9: Change in emissions intensity from the pre-reform reference period to 2025



Source: CCA analysis of Safeguard data CER, 2026m

Note: The analysis was undertaken at the facility level and then aggregated by industry for reporting to satisfy National Greenhouse and Energy Reporting secrecy requirements. For each facility, the Authority compared reported emissions to the emissions implied by continued production at their historical emissions intensity (an average of data from 2018 to 2022) for each output. Where a facility had several outputs, estimated emissions were calculated separately for each output and added to produce a facility total. Actual emissions were lower than this estimate in most industries when the results were aggregated, indicating lower overall emissions intensity. This method does not account for changes in emissions intensity due to facility closures or shifts in production between facilities that have different emissions intensities. The impact of these sorts of changes is particularly relevant for coal mines because coal mines vary widely in emissions intensity.

Lower emissions intensity may indicate on-site abatement. For example, carbon capture and storage projects are a driver of the decrease in emissions intensity in oil and gas. Catalytic technologies to reduce emissions from nitric acid production are a driver of the decrease in 'other manufacturing' (see section 3.2.4). However, emissions intensity can also change because of resource characteristics, operating conditions and other factors. The results therefore do not establish how much on-site abatement occurred or whether the 2023 reforms caused the changes.

3.2.4 Safeguard facilities are pursuing on-site abatement across a range of industries and technologies

Publicly available information identifies operating abatement projects and technology trials across several industries. The examples include technologies that directly destroy or store greenhouse gases, changes to energy supply and fuel use, and measures that improve operating efficiency.

Operating or deployed examples include:

- catalytic technology to reduce nitrous oxide emissions from nitric acid production (CEFC, 2025b)

13. Figure 9 shows an increase in the emissions intensity of Safeguard-covered coal mines in aggregate. This is a result of an increase in total emissions (including CO_2 from fuel combustion), relative to coal output for these facilities. See section 4.1 for a discussion of the methane intensity of coal mining.

- carbon capture and storage of reservoir carbon dioxide from gas extraction (Santos, n.d.)
- energy efficiency improvements, process optimisation, reduced flaring and fugitive methane emissions, and turbine and equipment upgrades at liquefied natural gas facilities (Woodside Energy, 2025)
- capture, flaring or use of concentrated coal mine waste gas (NSW Minerals Council submission (APA), 2026)
- use of alternative fuels in cement manufacturing (Cement Industry Federation submission (APA), 2026)
- conversion of coal-fired boilers to gas in alumina manufacturing (South32, 2023).

Trials and demonstration projects include:

- oxidation of ventilation air methane at underground coal mines (GM3, 2026)
- pre-drainage of methane at open-cut coal mines (Coronado, 2025)
- electric haul trucks and ancillary mining equipment in iron ore mining (Fortescue, 2026a).

Case study: Electrification of mining in the Pilbara

Diesel use in heavy mining equipment and rail operations is a major source of emissions from iron ore production. One pathway to reducing these emissions is the electrification of mining equipment and transport systems, supported by renewable electricity generation (DISR, 2025c). In the Pilbara, Fortescue is pursuing this approach through its Real Zero Target to eliminate Scope 1 and Scope 2 emissions from its Australian iron ore operations by 2030 (Fortescue, n.d., 2025).

Fortescue is progressing the deployment, commissioning and testing of battery-electric mining equipment across its Pilbara operations. In 2026, the company reported its first electric drill and 18 electric excavators becoming operational, while continuing testing and commissioning of battery-electric mining trucks, locomotives and other ancillary equipment (Fortescue, 2026f). Fortescue has purchased over 100 pieces of zero emissions heavy mobile equipment including battery electric wheel loaders, wheel dozers, water carts, float prime movers and graders (Fortescue, 2024; Hill, 2026). It has also begun commissioning 2 battery-electric locomotives on its rail network, which are expected to eliminate around one million litres of diesel consumption annually through renewable-electricity charging and regenerative braking technology (Fortescue, 2026d).

This electrification effort is being supported by major renewable energy investments. Fortescue has constructed more than 480 kilometres of high-voltage transmission lines linking mines, processing facilities and rail operations (Fortescue, 2026d). The company operates a 100 MW solar farm and 250 MW battery energy storage system at North Star Junction, while construction is progressing on its 190 MW Cloudbreak Solar Farm and Nullagine Wind Project (Fortescue, 2026d, 2026b).

Electrification also requires a workforce with the skills to safely operate, maintain and service these new technologies. To support this transition, Fortescue established its Power Up Training Centre in Western Australia and launched an Industrial Electrical Dual Trade Program. As of August 2026, 185 fitters and auto electricians had been trained in battery-electric vehicle inspection and servicing, while more than 6,000 employees had completed lithium battery awareness training and almost 12,800 had completed trailing cable awareness training (Fortescue, 2026f).

This case study illustrates how reducing emissions on site in the mining sector can require long-term, coordinated investment across low-emissions technology, renewable energy infrastructure and workforce capability development.

The available information does not provide a comprehensive account of on-site abatement across Safeguard facilities. Some examples began before the 2023 reforms, and several projects reflect a combination of policy, commercial and technical drivers. Indeed, many industry representatives emphasised in their engagement with the Authority that all major investments have multiple drivers, and few if any would be attributed to a single cause. The examples therefore show the types of on-site action

occurring at Safeguard facilities, but do not establish the amount of additional abatement caused by the reforms.

The following case studies illustrate different relationships between the Safeguard and investment in on-site abatement. Catalytic abatement in nitric acid production shows how the reforms influenced the deployment of established technology to additional facilities. Reservoir carbon capture and storage demonstrates how a broader set of policy and commercial drivers combined to incentivise uptake of emissions-reduction technology.

Case study: Catalytic technology is reducing nitrous oxide emissions from nitric acid production

Nitric acid production releases nitrous oxide, a potent greenhouse gas. Catalytic technology can destroy much of the nitrous oxide before it is released.

Four of the 5 Safeguard facilities producing nitric acid have installed catalytic abatement technology (CEFC, 2025a; Dyno Nobel, 2024; WA Government, 2025). Together, the projects are estimated to reduce emissions by around 1 Mt CO_2-e each year (CSBP, n.d.; Dyno Nobel, 2024; Orica, 2023). This is equivalent to around 39% of the 4 facilities' combined reported emissions in 2023 (CCA analysis of CER, 2026m).

The first Australian deployment was at Orica's Kooragang Island facility. The project received $13 million in grant funding from the New South Wales Government and $25 million in finance from the Clean Energy Finance Corporation (CEFC, 2025a).

The rapid uptake shows how proven technology can spread across an industry. The projects also illustrate how incentives under the Safeguard Mechanism can work alongside company investment, government grants and concessional finance. Orica stated that the 2023 reforms provided the investment stability needed to proceed with a final investment decision (Orica, 2023).

Case study: Reservoir carbon capture and storage is reducing emissions from gas extraction

Some natural gas reservoirs contain large amounts of carbon dioxide (CO_2), which must be removed before the natural gas is sold or processed. Carbon capture and storage involves processing this 'reservoir CO_2' and storing it underground rather than releasing it into the atmosphere (IEA, 2020).

Planned before the Safeguard reforms and registered as an ACCU project, Santos's Moomba project began operating in September 2024. The project sequestered about 1 Mt CO_2-e in 2025, reducing the facility's emissions by 51% compared to 2024 levels (Santos, n.d.; CCA analysis of CER, 2026m). Santos reports the project is on track to sequester up to its full capacity of 1.7 Mt CO_2-e per year, depending on CO_2 availability (Santos, 2025).

The reformed Safeguard Mechanism settings provide a strong incentive to capture and store reservoir CO_2 separated from gas supplied by new fields to existing LNG facilities. LNG facilities now receive a zero baseline allowance for these emissions, so any CO_2 that is released directly generates a compliance obligation (DCCEEW, 2026v).

3.2.5 ACCU supply also influences the incentive for on-site abatement

ACCU supply affects ACCU prices and therefore the relative incentive for Safeguard facilities to reduce emissions on site. The established ACCU market helped contain initial compliance costs when the 2023 reforms commenced. At that time, the marginal incentive rose from zero (for most facilities) to around $37, but substantial supply was available at that level.

As baselines decline, demand for abatement (including from ACCUs) will increase. Future ACCU supply will depend on issuance from existing projects, establishment of new projects, and the development or remake of methods for further projects to enter the scheme. Published outlooks generally project higher ACCU prices over time, although the timing and scale of any such increases are uncertain (BNEF, 2025c; EY-NZC, 2026; RepuTex, 2026). Increasing prices would increase the incentive for both new ACCU projects and new on-site abatement.

Government decisions influence the supply and types of ACCUs available for Safeguard compliance. Relevant decisions include priorities and timing for

method development, crediting rules and which units are eligible for compliance. The Authority's 2026 ACCU Scheme Review recommended publishing a forward view of method development priorities and expected timelines to support greater predictability and investment (CCA, 2026a).

The Authority also recommended reassessing the permanence period discount and risk of reversal buffer, and examining whether ACCUs from projects with 25-year permanence periods provide sufficient durability for Safeguard compliance. These assessments could affect the quantity and mix of ACCUs available for compliance.

The supply side of the ACCU market therefore forms part of the wider policy framework influencing the scale and pace of on-site abatement.

3.2.6 The full on-site response is still emerging

Stakeholders differed on whether the reforms are driving on-site abatement quickly enough. For example:

'Given the short operating history of the reformed Safeguard Mechanism and the long lead times associated with industrial decarbonisation projects, observed onsite abatement outcomes are not yet a reliable measure of policy effectiveness.'

BHP submission (APA), 2026

'On evidence of on-site abatement activities, material on-site abatement to date appears limited to a few facilities ... Where it is occurring it demonstrates feasibility, but thus far lacks the scale necessary to deliver significant reductions in climate pollution.'

Climate Council submission (APA), 2026

Major industrial abatement projects can take years to plan, finance, approve, construct and commission. Projects may require engineering and feasibility studies, technology trials, supporting infrastructure, skilled workers and integration with existing production systems. Facilities may also need to maintain safe and reliable production while new equipment is installed and commissioned. Projects initiated or accelerated in response to the 2023 reforms may therefore not yet be operational or reflected in reported emissions.

The Australian Industrial Decarbonisation Council observed:

'Lower-emissions investment in industrial transformation is rarely a simple technology substitution. It may require major integration with an existing production system, construction and operation of parallel systems during transition, or development of a successor asset while continuing to meet existing production and customer obligations. The engineering configuration of the facility determines much of the scale, sequence and risk of that investment, while the board must determine whether the resulting project can justify the capital required.'

Australian Industrial Decarbonisation Council submission (APA), 2026

The Authority identified examples of on-site abatement through public information, but these remain concentrated in a limited number of facilities and technologies.

It is important to recognise that the Safeguard Mechanism is one of several factors influencing investment. Environmental approval conditions, government support and finance, company emissions targets and climate risk management, customer demand and planned asset replacement all affect whether and when a project proceeds. Other factors, including national industrial policy, international markets and supply chains, are also influential, particularly for major transformational investments. Available evidence shows that some on-site action is occurring and that the Safeguard is creating a material incentive for abatement, but cannot isolate the reforms' contribution to an individual project or its emissions reductions.

Predictable policy settings are important because facilities make capital investments over long timeframes. The Authority will continue to assess on-site abatement as more compliance data become available and projects progress from development to operation. Section 3.4 considers whether changes to ACCU use are warranted at this stage, how other barriers to abatement can be addressed and how flexibility settings will be reassessed as the evidence develops.

3.3 Align the 2031 to 2035 Safeguard emissions budget with the 70% end of the national target range

Recommendation 1 | Align the 2031 to 2035 Safeguard emissions budget with a 70% economy-wide emissions reduction pathway

Set the Safeguard emissions budget for 2031 to 2035 so covered facilities contribute a proportional share of national emissions reductions of 70% on 2005 levels by 2035 – consistent with the approach taken for the period to 2030. Set the baseline decline rate for 2031 to 2035 to deliver that emissions budget. The decline rate should take account of forecast production, scheme coverage, trade-exposed baseline adjustments and an appropriate reserve.

3.3.1 Safeguard facilities should continue to make a proportional contribution to national emissions reductions

The Safeguard Mechanism emissions budget for 2031 to 2035 determines the aggregate net emissions permitted from covered facilities for that period. The baseline decline rate is the primary policy setting used to deliver that emissions budget.

When the 2023 reforms were designed, Safeguard facilities accounted for about 28% of national emissions. The legislated 2030 Safeguard outcomes were set by allocating covered facilities the same 28% share of Australia's 2030 emissions target and national emissions budget in net terms.

Applying the same approach for 2031 to 2035 would provide continuity and a transparent basis for setting the Safeguard emissions budget. A less ambitious Safeguard budget would allow Australia's largest industrial emitters to contribute less than a proportionate share, requiring greater abatement elsewhere if Australia is to meet its national target. A more ambitious budget would have the opposite effect.

While stakeholders expressed mixed views, many supported a proportional share approach for its simplicity and predictability. Some stakeholders suggested the approach should better reflect sector-specific abatement opportunities, but recognised this would add complexity.

The Minerals Council of Australia recommended the Government:

'Use the proportional-share approach because it aligns the SGM's contribution with Australia's national emissions reduction target while preserving scheme-wide consistency, transparency and policy stability.'

Minerals Council of Australia submission (APA), 2026

The proportional share would need to be recalculated if there were material changes to Safeguard coverage, including any change to the 100,000 t CO_2-e threshold.

3.3.2 70% alignment is consistent with the Authority's 2035 Targets Advice

A 70%-aligned Safeguard emissions budget is consistent with the Authority's 2035 Targets Advice that Australia should aim for the upper end of its target range (CCA, 2025b). The Authority estimates that it would deliver around 14 Mt CO_2-e more net abatement in 2035 than a 62%-aligned budget (equivalent to more than 2 percentage points towards achieving Australia's 2035 target) and 17 Mt CO_2-e more than the indicative post-2030 decline rate[14] (**Figure 10**). Cumulatively, a 70%-aligned emissions budget would deliver around 40 Mt CO_2-e more net abatement from 2031 to 2035 than a 62%-aligned budget, and around 50 Mt CO_2-e more than the indicative post-2030 decline rate.

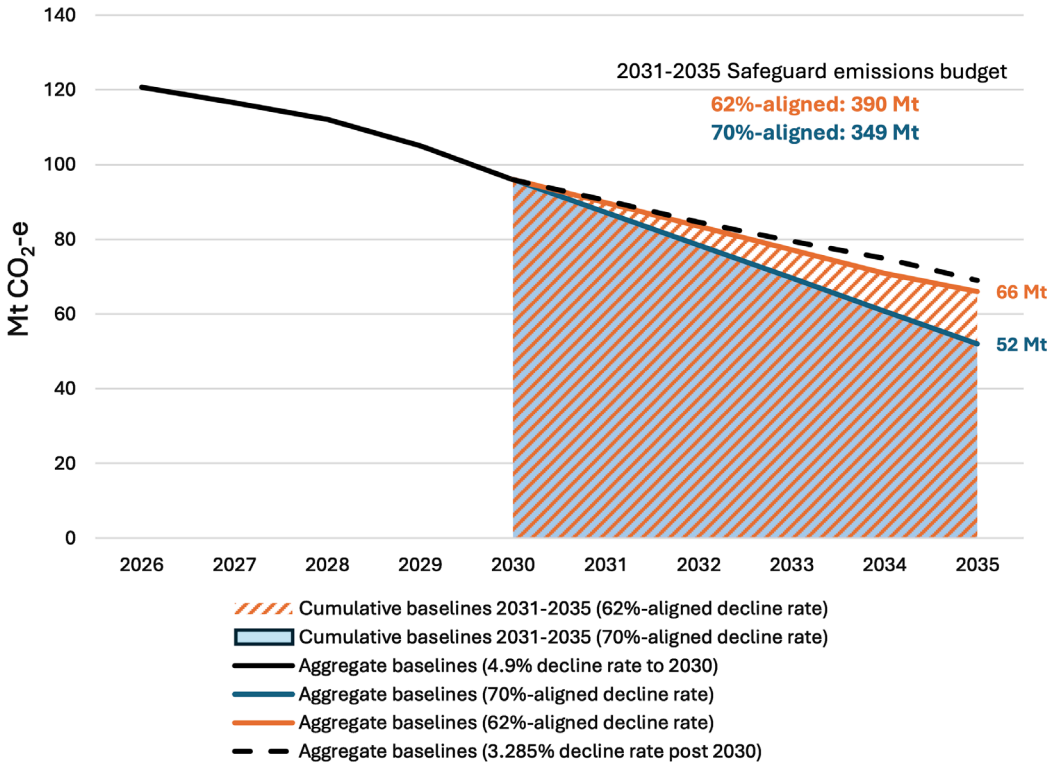
Some industry and resources sector stakeholders did not support more stringent Safeguard Mechanism decline rates, citing limited on-site abatement opportunities and increased costs of compliance. However, many stakeholders supported aligning the Safeguard Mechanism with the top end of Australia's 2035 target range.

'The government has set a 2035 target of 62–70 per cent below 2005 levels. Climateworks recommends the Authority's advice be anchored to meet or exceed the more stringent bounds of this range – 70 per cent. Directing government action to achieve Australia's commitments under the Paris Agreement to pursue efforts to limit warming to 1.5ºC supports Australia in unlocking opportunities from the global transition to a net zero economy, as well as meet the requirements of the Climate Change Act (2022).'

Climateworks Centre submission (APA), 2026

14. An indicative annual decline rate of 3.285% from 2031 to 2050 was set as a 'backstop' under the Safeguard Rules to assist industry planning for achieving net zero by 2050.

Figure 10: 70% alignment materially increases the Safeguard's contribution to Australia's 2035 target



Source: CCA internal analysis, 2026; DCCEEW, 2025a

The Authority's analysis indicates that a 70%-aligned emission budget would require a baseline decline rate of about 6.7% a year under current coverage and TEBA settings.

The Government will need to calculate the final rate after settling the Safeguard emissions budget and other settings. The calculation will need to account for forecast production, facility entry and exit, scheme coverage, TEBA settings, an appropriate reserve and other policy changes, so the final rate may differ from 6.7%.

Box 3: The Authority commissioned modelling to inform its advice

The Authority commissioned EY-Parthenon Strategy (EYPS) to compare stylised scenarios for 3 baseline decline rates (the indicative post-2030 decline rate of 3.285%, as well as 5% and 7%), and ACCU settings (quantitative limits and discounts). The modelling is one input to the Authority's advice, alongside consultation, sector analysis, published projections and – ultimately – the Authority's judgement.

The stylised scenarios were developed by EYPS in consultation with the Authority. They provide useful insights to the direction and relative scale of possible effects. The detailed results reflect assumptions about production, abatement technologies and costs, project lead times, ACCU supply, facility behaviour and how agents form future credit price expectations.

The model does not identify optimal or least-cost outcomes but instead reflects current and potential future dynamics and incentives. The modelled outcomes are very sensitive to forward price expectations.

The model holds production fixed across all scenarios – i.e. the level of production at each facility remains the same regardless of the different policy settings. The results therefore do not show how the modelled settings could affect facility production, profitability, investment or viability.

The EYPS report is published with this advice.

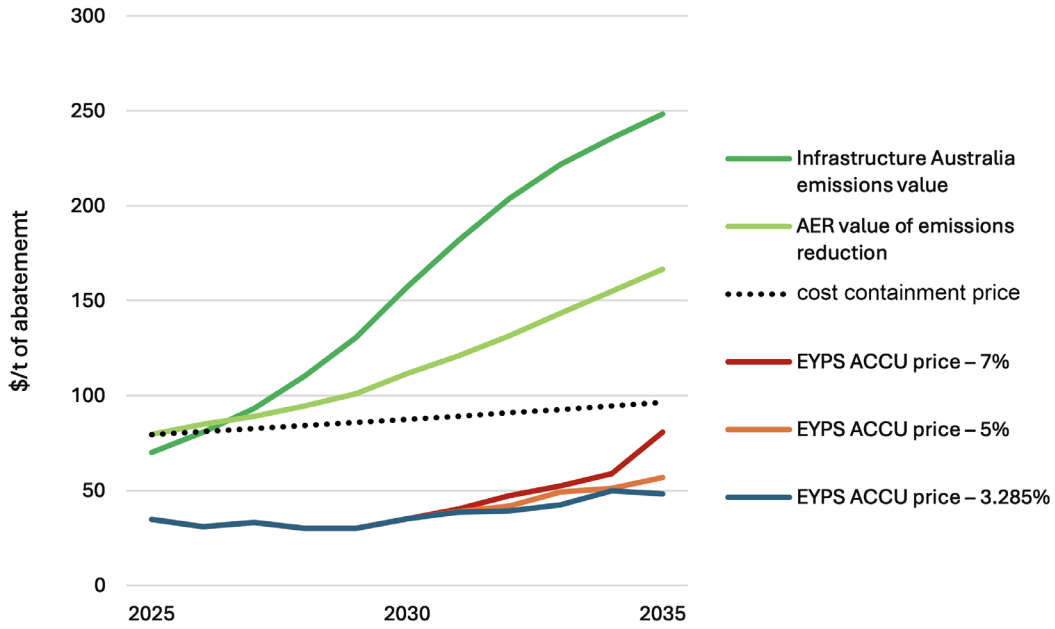
3.3.3 A 70%-aligned emissions budget would deliver additional abatement for relatively low additional costs

A 70%-aligned emissions budget and decline rate would increase aggregate compliance costs relative to a lower-ambition pathway. The average cost per tonne of abatement changed relatively little between the 62% and 70%-aligned scenarios EYPS modelled for the Authority because facilities with limited on-site abatement options continued to meet their compliance obligations through ACCUs and SMCs (see **Box 3**).

The 70%-aligned scenario also delivered cost-effective abatement. The marginal price in this scenario remained well below the benefits of those reductions. In 2035, the modelled market clearing ACCU price was about $80[15] per tonne under the 7% decline-rate scenario. This is well below the 2 °C-consistent carbon values[16] used in Australian policy and investment evaluation. ACCU prices also remained below the projected cost containment price (**Figure 11**).

In contrast, market clearing ACCU prices associated with the indicative 3.285% decline rate reach around $50 per tonne in 2035, delivering 20 Mt CO_2-e less abatement in that year (and 51 Mt CO_2-e less across 2031–2035) relative to the 7% scenario. This left substantial cost-effective abatement untapped.

Figure 11: Projected ACCU prices remain well below key cost and carbon value benchmarks



Source: AER, 2024; Infrastructure Australia, 2024; EYPS modelling for the Authority, 2026

Note: All values are expressed in 2025 dollars

Compliance costs would affect individual facilities differently, including through impacts on profitability, investment and viability. The EYPS modelling for the Authority is not well suited for assessing facility-level impacts, including compliance costs, and does not assess the effects of policy settings on facility production levels, profitability or viability. Continued access to flexible compliance arrangements such as ACCUs and SMCs, banking and borrowing, TEBA arrangements and broader industry policies can moderate policy effects. Sections 3.4 and 3.5 consider those settings in more detail.

15. In the EYPS modelling for the Authority, market clearing ACCU prices are above the average per tonne delivery cost of abatement after 2030 because a large share of the abatement achieved in a year comes from earlier investments delivering ongoing lower cost on-site and off-site abatement.
16. Carbon values estimate the economic, environmental and social benefit of avoiding one tonne of CO_2-e emissions. Australian jurisdictions, including the Australian Energy Regulator and Infrastructure Australia, use 2 °C-consistent carbon values to inform Australian policy and investment decisions. These provide useful benchmarks to assess the economic efficiency of abatement under the Safeguard Mechanism.

3.4 Retain compliance flexibility at this time

Recommendation 2 | Use targeted measures rather than general discounts or limits on the use of ACCUs to drive greater on-site abatement.

Preserve trading as a central feature of the Safeguard Mechanism to support achievement of a 70%-aligned emissions budget at reasonable cost and provide stable and predictable settings for long-term investment. Prioritise targeted responses to specific barriers to on-site abatement, including of fossil methane emissions.

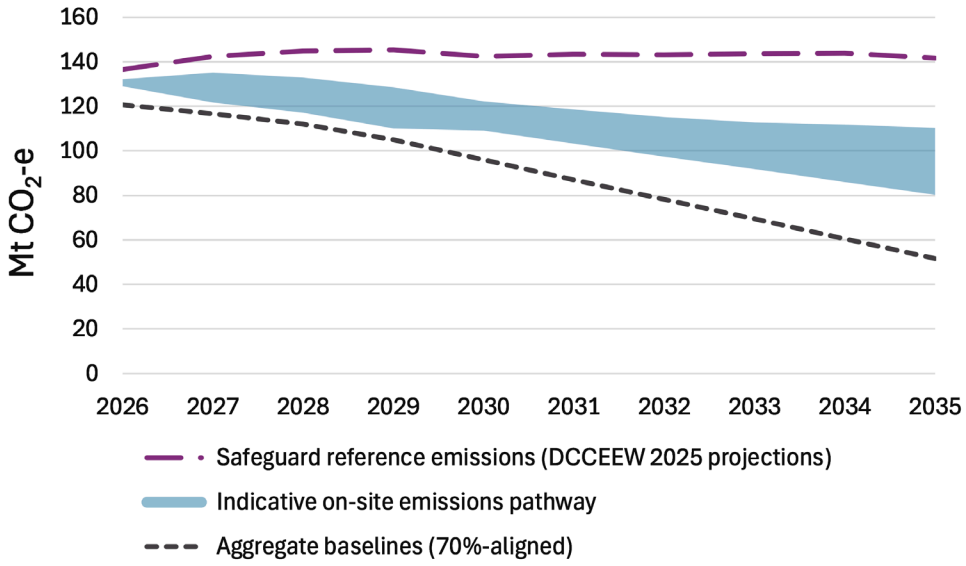
3.4.1 Greater ambition supported by compliance flexibility and targeted on-site abatement measures is preferable to changing ACCU use

A 70%-aligned Safeguard emissions budget would strengthen the aggregate emissions reduction task for covered facilities and the financial incentive for on-site action. Continued access to ACCUs and SMCs would allow all facilities to contribute to that larger task, including those without viable or cost-effective on-site opportunities. This is important because many Safeguard facilities are in 'harder to abate' sectors that are projected to decarbonise more slowly than the economy-wide average rate to 2035.

Compliance flexibility does not remove the incentive for facilities to reduce emissions on site. As baselines decline, demand for abatement will increase. This is expected to increase ACCU and SMC prices and sharpen the incentive for on-site investment.

Further, allowing ACCUs to be used for compliance means aggregate baselines can be set to decline faster than on-site emissions reductions alone could achieve. The Authority has examined various estimates of the level of on-site emissions reductions achievable at Safeguard facilities over the period to 2035. Even the most ambitious scenarios – aligned with global action to keep warming well below 2 °C – suggest Safeguard facilities will need to complement on-site emissions reductions with ACCUs to comply with 70%-aligned baselines (**Figure 12**).

Figure 12: Indicative on-site emissions pathway for Safeguard facilities



Source: CCA internal analysis; EYPS modelling for the Authority, 2026; DCCEEW, 2025a; and CCA analysis of Treasury Net Zero Transformation modelling (Treasury, 2025a)

Notes: The indicative pathway combines projections from the sources listed above as an illustrative range. Each projection differs in its assumptions about production, policy settings, and the cost and availability of emissions-reduction technologies, among other factors. CCA internal analysis considered potential uptake of technologies by 2035 to inform the Authority's 2035 Targets Advice. EYPS modelling for the Authority examined scenarios aligned with the 2035 target. DCCEEW emissions projections estimated emissions based on current policies. Treasury modelling examined the impact of Australia's transition to net zero.

Notes for Figure 12 continued: Projected on-site emissions decline due to both production changes and uptake of emissions-reduction technologies. The gap between on-site emissions (in blue) and aggregate baselines (in black) represents ACCUs that would need to be surrendered for compliance. The aggregate baseline trajectory is indicative and is subject to final settings determined by the Government's review.

The Authority heard consistently from stakeholders that predictable policy settings are needed to support long-term investment. As discussed in section 3.2.6, major industrial abatement projects have long lead times. Policy stability is therefore important, although it would not justify retaining current settings if there was clear evidence that facilities were materially delaying feasible on-site abatement.

'Industrial decarbonisation projects can take years to develop, finance and deliver, meaning uncertainty around future compliance settings can directly affect investment decisions being made today.'

Safeguard symposium key takeaways, Carbon Market Institute, 2026

Stakeholders identified a range of barriers to on-site abatement that a stronger price signal or changes to ACCU use would not resolve on their own. These include technologies that are not yet ready for commercial deployment, nascent markets for low-emission industrial products, safety and regulatory constraints affecting fossil methane abatement, and limited access to enabling infrastructure at remote industrial facilities. Targeted measures can respond directly to specific barriers, alongside broader industrial and trade policies building new markets. Within that context, it is reasonable to preserve the role of the Safeguard in setting the aggregate emissions task and providing a financial incentive for facilities to reduce emissions. These are discussed in sections 3.4.6 and 3.6.

ACCUs support Australia's transition to net zero, but direct industrial abatement will need to increase as technologies mature, enabling infrastructure is delivered and assets are replaced (CCA, 2024b). Australia will also need policies that deliver lower-emissions agricultural production and durable land sector sequestration in ways that complement productive and resilient land use and that build on the abatement activity supported through Safeguard demand for ACCUs (CCA, 2026a).

The Authority considered whether restricting or changing ACCU use would deliver greater on-site abatement. However, at this stage we do not consider that general changes to ACCU use are justified. The reforms have only been in place for 3 years, and there is insufficient evidence that changes are the best method for achieving extra on-site abatement at an acceptable cost. The Authority will continue to monitor the Safeguard's performance and will reconsider ACCU settings as part of its 2028 review of the NGER Scheme.

3.4.2 Stakeholders expressed different views about ACCU use

Consultation revealed materially different views about the role of ACCUs. Industry groups emphasised that access to ACCUs moderates compliance costs and allows facilities to contribute to the national emissions reduction task while on-site abatement technologies mature. Environmental organisations argued that ready access to ACCUs can weaken incentives to invest in on-site abatement even where technologies are already available. Groups representing investors and workers raised concerns that an overreliance on ACCUs could delay industrial transformation and affect the long-term competitiveness of industrial facilities, employment and regional communities.

'The ability to access ACCUs allows facilities to continue contributing to Australia's emissions reduction objectives while onsite abatement pathways mature.'

Chamber of Minerals and Energy of Western Australia submission (APA), 2026

'For many facilities covered by the Safeguard Mechanism, the goal of industry decarbonisation is in part to ensure these facilities remain viable and in demand in a low carbon world, providing secure jobs for Australian workers. Over-reliance on nature-based offsets delays the important work on on-site carbon abatement and risks stranding facilities, communities, and workers.'

Australian Council of Trade Unions submission (APA), 2026

The Authority recognises these risks. Excessive reliance on ACCUs could delay feasible industrial transformation, while poorly designed restrictions could increase costs and complexity, and may compromise the emissions outcome through elevated non-compliance. The Authority's judgement is that the available evidence does not yet demonstrate that a general restriction would improve emissions outcomes overall. An approach that combines a stronger emissions task with compliance flexibility, measures addressing specific barriers and a defined point for reassessment is preferable at this stage.

3.4.3 Modelled changes to ACCU use delivered extra on-site abatement with increased compliance costs

A range of policy designs could change the quantity or effective cost of ACCUs used for Safeguard compliance. The Authority commissioned EYPS to model illustrative ACCU caps and discounts (**Box 4**).

Box 4: ACCU caps and discounts

An ACCU cap would limit the number of ACCUs that can be surrendered for Safeguard compliance. A cap could be applied at the facility, industry or scheme level. Where a cap applies above facility level, tradeable surrender rights could allow available ACCU use to be allocated between facilities; this would increase flexibility but also introduce additional complexity.

An ACCU discount would require a facility to surrender more than one ACCU for each tonne of emissions above its baseline. This would increase net abatement because more than one tonne of credited abatement is surrendered for each tonne of facility emissions.

The modelled scenarios test particular cap and discount designs. They do not represent every way in which ACCU use could be capped, discounted or otherwise changed.

Facility-level caps delivered some extra on-site abatement but at substantially higher cost

The EYPS modelling for the Authority applied caps at the facility level, limiting ACCU surrender to 30% or 50% of each facility's pre-Safeguard baseline.

Under the 7% decline rate scenario, both the 30% and 50% caps increased on-site abatement to some extent beyond 2035 (**Figure 13**). However, average compliance costs per tonne of abatement more than doubled compared to the no-cap scenario (**Figure 14**). The delay in achieving extra on-site abatement reflects the long lead time for abatement projects. The results suggest that ACCU caps applied at the facility level could be a very costly way to increase on-site abatement.

In addition, the ACCU caps led to material abatement shortfalls, resulting in aggregate net Safeguard emissions being higher than aggregate baselines. This is because some facilities could not access sufficient on-site abatement or SMCs to meet the obligations imposed by the cap, even where lower-cost emissions reductions remained available through the ACCU Scheme. The shortfalls were substantially greater under the 30% cap but also occurred under the 50% cap.

More flexible designs, including scheme-wide or industry-level caps with tradeable surrender rights could allocate available ACCU use more efficiently than fixed facility-level caps, but would increase scheme complexity. Section 3.4.4 explores other ACCU treatment options and their potential impact.

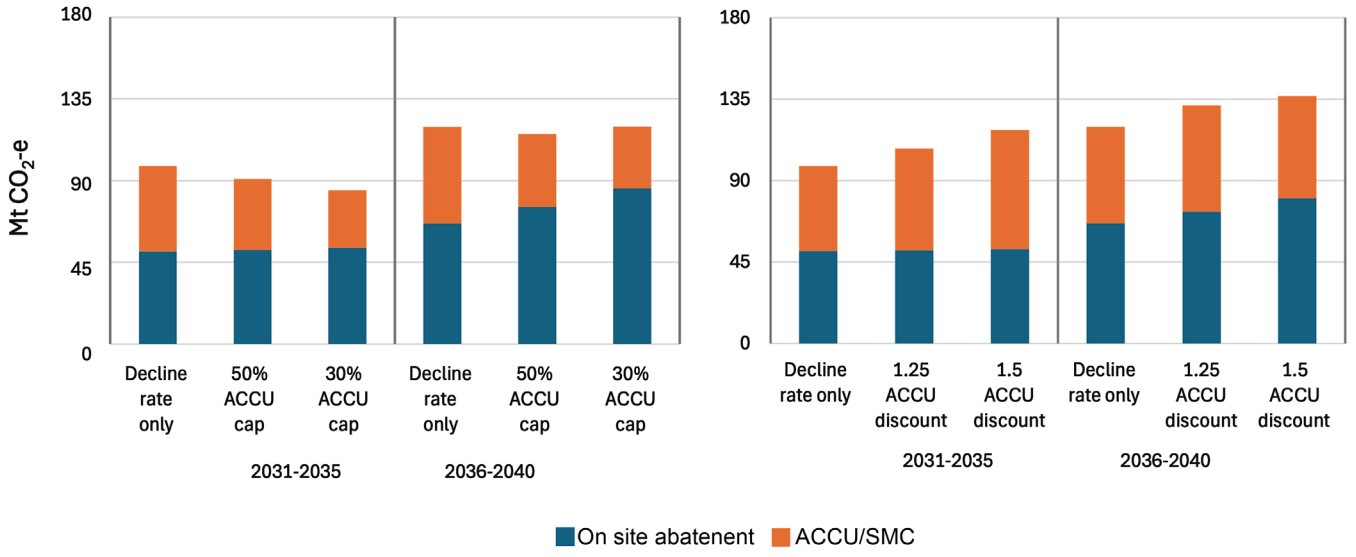
ACCU discounts delivered some extra on-site abatement and more overall abatement, at moderately higher cost

EYPS also modelled discounts requiring facilities to surrender 1.25 or 1.5 ACCUs for each tonne of emissions above baseline. Unlike a cap, a discount does not directly limit access to ACCUs. Instead, it increases the number of ACCUs required for compliance, increasing net emissions reductions and the effective cost of relying on credits. As a result, it increases the financial incentive for on-site abatement.

Between 2031 and 2040, ACCU discounts increased net abatement and produced a modest increase in on-site abatement after 2035 (**Figure 13**). The discounts also increased compliance costs (**Figure 14**), to a significant extent (particularly beyond 2035) with a 1.5 ACCU discount, and to a modest extent with a 1.25 ACCU discount. These increased costs reflect 2 underlying drivers: the discount requires facilities to pay for more ACCUs; and by increasing total demand, the discount increases the marginal cost of ACCU supply.

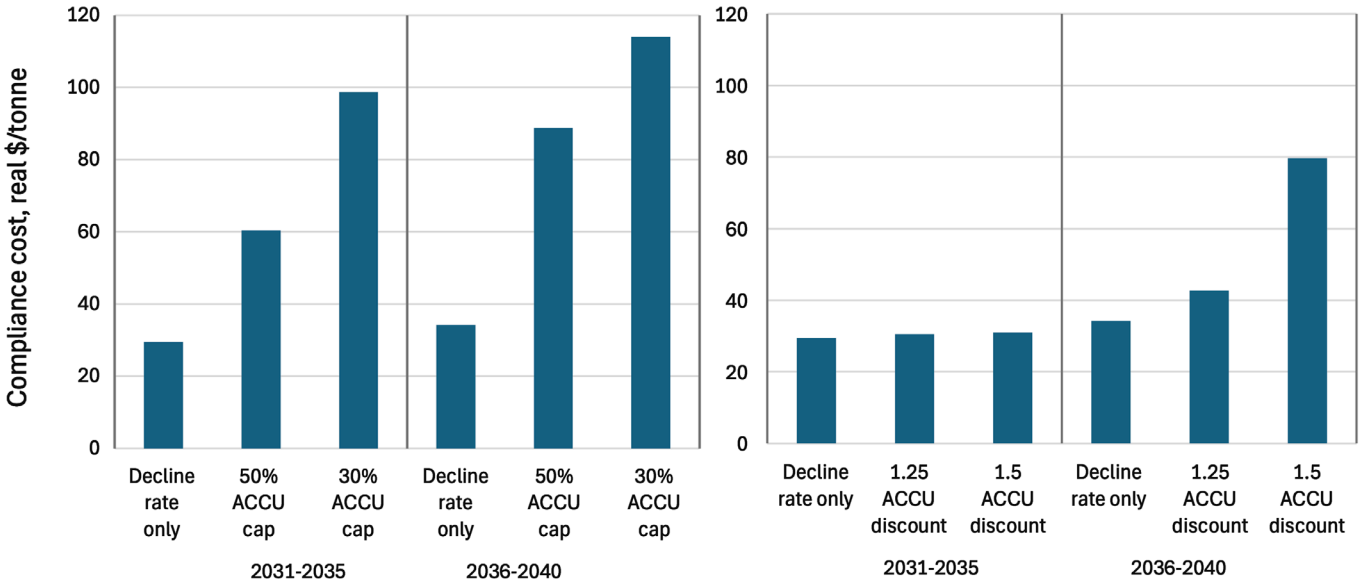
In combination with a 7% decline-rate, the 1.5 ACCU discount increased demand for ACCUs beyond the supply projected to be available in the mid-2030s. This led to credit shortages and compliance shortfalls for some facilities. Less stringent settings or stronger ACCU supply could mitigate this risk.

Figure 13: Annual average abatement with ACCU treatment options (7% decline rate)



Source: EYPS modelling for the Authority

Figure 14: Average compliance cost with ACCU treatment options (7% decline rate)



Source: EYPS modelling for the Authority

Note: Compliance costs include modelled on-site abatement costs and the costs of producing ACCUs surrendered for compliance. The average cost is calculated using the emissions obligations met through on-site abatement and ordinary ACCU and SMC surrender. Additional ACCUs required by the discount are included in total costs but not counted as additional tonnes of compliance.

Discounting ACCUs appears to be a better way to drive more on-site abatement than facility-level caps

Under the scenarios EYPS modelled for the Authority, adopting facility-level caps or ACCU discounts did not result in material extra on-site abatement until after 2035, and both cap scenarios resulted in substantially higher compliance costs and abatement shortfalls for Safeguard facilities. The results suggest that the costs and risks associated with facility-level caps are significantly higher than for ACCU discounts.

The modelling shows how discounting ACCUs drives net emissions below baseline emissions, effectively over-achieving on the Safeguard Mechanism's abatement task. Discounting could therefore be paired with a lower decline rate to deliver a similar aggregate emissions result. For example, for the 2031-2035 period the modelled 5% decline rate coupled with a 1.25 ACCU discount produced a similar overall abatement outcome to the 7% decline rate scenario with no discount.

3.4.4 Other ACCU policy settings could produce different outcomes

Since the Authority commissioned its modelling, stakeholders and researchers have proposed different approaches for the treatment of ACCUs for Safeguard compliance. These include scheme-wide or industry-level caps with tradeable surrender rights, or fees, levies and other price-based measures.

Recent analysis by the Australian National University's Centre for Climate and Energy Policy (ANU CCEP) (Hatfield-Dodds and Jotzo, 2026) brings together several of these proposals (**Table 2**).

Table 2. Mechanisms analysed by ANU CCEP

Mechanism	Description	Illustrative change in annual on-site abatement	Illustrative change in annual industry costs	Other outcomes
System-level ACCU cap	A system-wide cap on ACCU use, limiting offsets to 50% of total scheme compliance. Facilities would receive tradeable surrender allowances, allowing more efficient distribution of ACCU use.	50% increase	17% increase	Does not raise revenue or drive additional net abatement
ACCU discount	Requires facilities to surrender 1.4 ACCUs for each tonne of emissions above baseline.	17% increase	72% increase	25 Mt additional net abatement
Royalty or surrender fee without reinvestment	Increases the cost of generating or using ACCUs through a royalty on ACCU issuance, a fee on ACCU surrender or a combination of the 2.	20% increase	31% increase	$2.3 billion annual revenue
Royalty or surrender fee with nature royalty fund	Royalty/surrender fee on ACCUs as above, with 100% of revenue used to provide top-up payments for nature repair, lifting ACCU supply through co-benefit projects.	18% increase	20% increase	$2.3 billion annual revenue to support nature benefits
Royalty with support for abatement and nature	Royalty/surrender fee on ACCUs as above, with share of revenue reinvested to reduce on-site abatement cost to facilities by around 35%, and the balance used for nature benefits.	48% increase	13% increase	$1.8 - $2.3 billion to support on-site abatement and nature benefits

Source: Hatfield-Dodds and Jotzo, 2026

Note: Results are changes from the paper's 'current-policy' scenario. 'Industry costs' are the estimated total costs to Safeguard facilities. Results are for an abatement task of 90 Mt occurring by around 2033, which is broadly similar to a 70%-aligned Safeguard emissions budget.

The ANU CCEP analysis is not a modelling exercise and cannot be directly compared with the results of the EYPS modelling for the Authority. However, the ANU CCEP analysis indicates that alternative designs could produce materially different on-site abatement and cost outcomes. It adds to the evidence base and warrants consideration if current flexibility settings are shown to materially delay feasible on-site abatement.

Some stakeholders have recommended implementing an ACCU price corridor by reforming the current cost containment measure to allow prices to rise predictably in response to market signals (EY-NZC, 2026; IGCC, 2026). This aims to maintain ACCU prices at a level that would incentivise on-site abatement, while retaining access to ACCUs and providing increased certainty for Safeguard facilities and ACCU suppliers.

Other stakeholders have recommended limiting the vintage of ACCUs that can be used for Safeguard compliance (AIG, 2026; Grattan Institute, 2026). Vintage limits could improve turnover of ACCUs by reducing the incentive to stockpile them. This could support the achievement of Australia's national emissions targets by better aligning the timing of emissions reductions with the period in which they are used for compliance. The Authority notes the Government is considering vintage limits through its review.

3.4.5 The cost containment measure could affect long-term investment incentives

Expected ACCU prices influence decisions about on-site abatement. Higher expected prices would make on-site projects more attractive sooner.

The cost containment measure allows eligible Safeguard facilities to buy ACCUs from the Government at a set price. It was introduced as part of the 2023 reforms to manage the risk of high or volatile compliance costs arising from constraints in ACCU supply. The price increases each year at the rate of inflation plus 2 percentage points (DCCEEW, 2024d).

To date no ACCUs have been purchased through the measure. The Government's consultation paper reports that the cost containment measure price was $82.68 in 2026, compared with an average ACCU spot price of $36.99, and that market analysts considered use of the measure unlikely before 2030 (DCCEEW, 2026w).

The measure is backed by a finite reserve of ACCUs – currently around 5.5 million ACCUs, and estimated to grow to as many as 26 million by 2030 (DCCEEW, 2026w). This compares with projected Safeguard compliance demand of 26 million ACCUs in 2030 and 35 million in 2035. The reserve may therefore cover less than one year of projected demand.

As **Figure 11** shows, the cost containment price is projected to remain well below the emissions values consistent with keeping warming well below 2 °C. The gap widens over time as these emissions values increase more quickly than the cost containment price. This suggests the cost containment measure could deter on-site abatement investments that are cost-effective from a societal perspective. Removing it, or increasing the price more rapidly, would improve alignment between Safeguard incentives and Australia's climate goals.

The Government's review is considering whether the current price remains appropriate and whether the reserve should be expanded. In making these decisions, the Government should assess whether the measure could continue to protect facilities from excessive compliance costs without materially weakening incentives for feasible and socially efficient on-site abatement.

3.4.6 Some barriers to on-site abatement require targeted responses

The cost containment measure and other trading settings influence the financial incentive for on-site abatement. However, some projects remain constrained by barriers that more stringent Safeguard settings and a higher expected ACCU price will not resolve on their own. These include:

- **Technology readiness:** Some technologies are not yet sufficiently mature, proven or adapted for widespread deployment at Australian facilities. Technologies may require further demonstration at commercial scale, under Australian operating conditions or across different industrial applications.
- **Availability and cost of alternatives:** Low-emissions alternatives to liquid fossil fuels remain limited in some mining, industrial and transport applications. In some cases, alternatives are not yet commercially available at the required scale or remain significantly more expensive than conventional fuels. Non-climate policies can also affect the relative economics of different abatement options. For example, some stakeholders highlighted that fuel tax credits reduce the net cost of diesel used in eligible off-road activities, thereby weakening the financial incentive to replace diesel at Safeguard facilities (IEEFA submission (APA), 2026; Fortescue submission (APA), 2026).
- **Safety, regulatory and approval requirements**: Some abatement options cannot be deployed

without resolving safety or regulatory issues. For example, some stakeholders noted wider deployment of ventilation air methane oxidation depends on demonstrating that technologies can operate safely and effectively under Australian mine conditions (Mining and Energy Union submission (APA), 2026; NSW Minerals Council submission (APA), 2026).

- **Enabling infrastructure**: Access to renewable electricity, electricity grids, biofuels, CCS or other shared infrastructure can enable decarbonisation. Remote and regional facilities may face additional challenges in reducing their on-site emissions where required infrastructure has not yet been developed.
- **Investment and operating constraints**: Major industrial projects can involve substantial upfront costs, long asset replacement cycles, integration with existing production systems and new workforce capabilities. Shorter asset or mine lives can also reduce the commercial case for fixed infrastructure and long-lived equipment.

Taken together, the evidence indicates there are still significant challenges for many facilities in implementing direct, on-site abatement at scale.

The Safeguard Mechanism operates alongside policies that address some of these barriers directly. Existing measures support:

- technology development and commercialisation through the Australian Renewable Energy Agency and the Powering the Regions Fund
- access to capital through the Clean Energy Finance Corporation and the National Reconstruction Fund
- development of lower-emissions industries and fuels through Future Made in Australia measures
- enabling infrastructure through Rewiring the Nation and the Western Australian Government's Pilbara Energy Transition Plan
- deployment of fossil methane abatement through state measures, including the NSW Environment Protection Authority's Climate Change Licensee Requirements and the Queensland Government's Low-emissions Investments Partnerships program (NSW EPA, 2026a; Qld Treasury, 2026).

Chapter 4 recommends measures to respond to some of the identified barriers to reducing fossil methane emissions. Section 3.6.2 examines the role of shared renewable electricity infrastructure in enabling deeper emissions reductions at remote Safeguard facilities.

3.4.7 The Authority will reassess whether existing flexibility settings remain appropriate as evidence develops

The Authority's judgement is that a 70%-aligned emissions budget, continued compliance flexibility and targeted measures provide the most effective and efficient approach at this time. Flexibility enables the stronger aggregate emissions task to be delivered at lower cost, while targeted measures address barriers that the Safeguard incentive would not resolve on its own.

The Authority will continue to assess whether the combined policy framework, including existing Government measures and the additional responses recommended in this report, effectively stimulates on-site abatement to a level consistent with Australia's climate goals. This will inform future advice on whether further targeted measures or changes to Safeguard settings are warranted.

The Authority's 2028 review of the National Greenhouse and Energy Reporting legislation provides a formal opportunity to consider whether changes to ACCU use or other settings are warranted. By then, 4 complete years of compliance data under the reformed Safeguard Mechanism will be available, alongside additional information on Safeguard facilities' abatement plans.

The assessment could consider:

- gross emissions and emissions intensity, recognising relevant data limitations
- delivered, committed and announced on-site projects
- use of ACCUs, SMCs and other flexibility arrangements
- ACCU and SMC prices, supply and market conditions
- technology readiness, project lead times and enabling infrastructure
- sectoral progress against the Authority's reference pathways
- whether feasible on-site projects are being deferred due to credit availability
- whether complementary measures are addressing material barriers to on-site abatement.

If material policy change is warranted, the Authority would consider appropriate notice and transition arrangements.

3.5 Target assistance to activities facing material carbon leakage risks

Recommendation 3 | Reform trade-exposed baseline-adjusted (TEBA) arrangements to better manage carbon leakage risk and support an equitable distribution of costs.

Reform TEBA arrangements from a facility basis to a sectoral basis to better target activities facing a demonstrated and material risk of carbon leakage, while preserving the overall ambition for Safeguard emissions reductions.

3.5.1 A stronger emissions budget will affect industries differently

The Authority has considered the costs, benefits and distributional effects of its advice. A 70%-aligned Safeguard emissions budget would increase the required net emissions reductions and compliance costs for covered facilities. The impact would vary between industries because facilities differ in their emissions, abatement opportunities, profitability and exposure to international competition.

Strong climate action and clear, enduring abatement policies are essential to maintaining Australian industry's competitiveness as the world transitions to net zero. However, in the short term, for some trade-exposed activities, higher Australian compliance costs could potentially cause production or investment to move to other countries with weaker climate policies. This is known as carbon leakage.[17] When carbon leakage occurs, lower production in Australia may not reduce global emissions. Global emissions could increase if production moves to a country where it is more emissions-intensive. This would erode the environmental effectiveness and efficiency of Australia's policy settings.

Trade exposure alone does not establish a material risk of carbon leakage. An industry may export its products or compete with imports but still be able to absorb or pass on its Safeguard costs. Carbon leakage risk arises where Safeguard compliance costs could materially shift investment or production to overseas competitors facing weaker emissions constraints.

3.5.2 Current TEBA arrangements provide facility-level assistance

TEBA arrangements are the main way the Safeguard Mechanism manages carbon leakage risk. A facility with an approved TEBA determination receives a lower baseline decline rate for a limited period.

Current eligibility is assessed facility-by-facility. It depends on Safeguard compliance costs relative to the facility's earnings. This approach can result in facilities that produce the same goods receiving different treatment, even when they compete in the same market. This reduces equity (**Box 5**).

Linking eligibility to facility costs can also weaken incentives for on-site abatement. For example, a facility that reduces its emissions on-site will lower its compliance costs for the purposes of the TEBA eligibility test. This may impact the facility's eligibility for TEBA assistance, or the extent of assistance it receives. This may disincentivise on-site abatement, reducing the Safeguard's efficiency and effectiveness. The Government's consultation paper identifies both issues and seeks views on whether sectoral arrangements would target carbon leakage more effectively and provide more consistent treatment.

The number of facilities eligible for TEBA may also increase as compliance obligations grow. Without reform, this could shift an increasing share of the Safeguard task to facilities that do not receive TEBA assistance, or limit the emissions reductions that can be achieved at an acceptable cost.

3.5.3 Sectoral TEBA arrangements would protect activities facing material carbon leakage risks

The Authority recommends replacing the facility-level TEBA approach with sectoral or product-based arrangements. Sectoral TEBA arrangements would distribute the abatement task between industries covered by the Safeguard Mechanism by applying differentiated baseline decline rates.

Under sectoral TEBA arrangements, facilities producing the same eligible product would receive consistent treatment based on the carbon leakage risk facing that activity, rather than the financial circumstances of an individual facility (**Box 5**).

Assistance should be limited to activities where evidence demonstrates a material risk that Australian production or investment could move overseas because competing producers face weaker emissions constraints. The Authority has not undertaken the

17. For a detailed assessment of carbon leakage risks in Australia, see the Australian Government's Carbon Leakage Review (DCCEEW, 2026g).

detailed product and activity-level assessment needed to determine eligibility. However, the Government's consultation paper and the Carbon Leakage Review indicate where these risks may be concentrated. Cement, clinker and lime were identified as the strongest candidates. Hydrogen, ammonia and derivatives, steel, iron and glass were also identified as potential candidates requiring further investigation (DCCEEW, 2026g). These are mainly emissions-intensive manufacturing and processing activities exposed to competition from imports or overseas production.

Box 5: Facility-level and sectoral TEBA arrangements

Under the current facility-level TEBA arrangements, facilities that meet the eligibility criteria may receive concessional decline rates that are lower than the standard annual decline rate of 4.9%. In practice, this can lead to uneven TEBA coverage within certain industries.

Alumina refining is one such example. Of the 6 alumina refineries covered by the Safeguard in 2025, 3 received concessional decline rates of 1% while the remaining 3 received the standard decline rate of 4.9% (CER, 2026a).

Under a sectoral TEBA arrangement, all 6 facilities would receive the same concessional decline rate. The Government would determine that rate informed by detailed product-level analysis and the Safeguard emissions budget.

The practical effect of sectoral TEBA arrangements is likely to be better targeted assistance towards some emissions-intensive manufacturing and processing activities, such as those identified in the Carbon Leakage Review. This assistance would shift more of the task to activities that do not receive TEBA assistance. Based on the Carbon Leakage Review, extractive activities including coal mining, iron ore mining and oil and gas extraction would be unlikely to receive sectoral TEBA assistance.

It is important to note that sectoral TEBA arrangements would change the distribution of compliance costs between Safeguard-covered industries; it would not change the overall quantity of emission reductions. The standard decline rate would need to be set taking account of anticipated TEBA concessions, to ensure aggregate baselines remain within the recommended emissions budget. TEBA assistance supports activities facing material carbon leakage risks, while the standard decline rate for other facilities preserves the aggregate Safeguard emissions budget.

3.5.4 Differentiated treatment should respond to carbon leakage, not estimated abatement potential

The Authority considered setting different decline rates according to industries' abatement potential. This approach could place more of the Safeguard task on industries assessed as having lower cost or more readily available abatement opportunities.

'differential treatment better accounts for the different marginal abatement cost curves across sectors, better incentivising the significant cost competitive abatement opportunities available to the fossil fuel extraction sector compared to more constrained opportunities in manufacturing and heavy transport'

Australian Conservation Foundation submission (APA), 2026

The Authority does not recommend this approach. Businesses generally have better information than governments about their facilities, abatement costs, operating constraints and investment plans. Abatement opportunities and costs also change as technologies develop, infrastructure is built and assets are replaced. Government assessments could therefore become outdated or allocate the task inefficiently.

Indeed, a key strength of the Safeguard Mechanism's market-based design is that it allows facilities to respond to their own circumstances. Every facility has an incentive to reduce emissions where doing so costs less than meeting its obligation through ACCUs or SMCs. Where a particular barrier prevents feasible on-site action, targeted complementary measures may provide a more effective response than a different decline rate.

Carbon leakage risk and limited abatement opportunities can overlap, but they are different policy problems. A Safeguard facility may have limited near-term abatement options but capacity to absorb or pass on its compliance costs. Another facility may have abatement options available but still face

carbon leakage risk because it competes directly with overseas producers facing lower carbon costs.

Demonstrated and material carbon leakage risk is therefore a clearer basis for targeted assistance. Reforming TEBA would also use an existing Safeguard Mechanism framework rather than create a separate system of industry decline rates. This avoids unnecessary complexity.

3.5.5 Detailed design will need to preserve incentives and manage change

In developing sectoral TEBA arrangements, the Government should:

- establish clear criteria for demonstrated and material carbon leakage risk
- treat facilities producing the same products consistently
- preserve incentives for on-site abatement and lower-emissions production
- review eligibility and assistance as market and policy conditions change
- calibrate adjusted and standard decline rates together so the aggregate emissions budget is preserved
- provide appropriate transition arrangements for facilities receiving assistance under current settings
- account for interactions with any border carbon adjustment.

The Government's consultation paper indicates that sectoral arrangements could commence in 2031. Existing TEBA facilities could retain their current adjusted decline rates until their determinations end, with rules governing any further applications before 2030.

A border carbon adjustment could reduce the case for TEBA assistance by applying a comparable carbon cost to covered imports. Where a border measure provides effective protection against the relevant carbon leakage risk, continued TEBA assistance should be reviewed to avoid overlapping support (DCCEEW, 2026g).

3.6 Targeted measures to unlock on-site abatement

As discussed above, some on-site abatement is constrained by practical barriers that a stronger Safeguard price signal alone would not resolve. Targeted measures can address these barriers directly.

INPEX argued that:

'In many cases, complementary policies outside the Safeguard framework may be better suited to accelerating emissions reductions. This could include targeted support for enabling infrastructure, technology demonstration and commercialisation, strategic industrial precinct development, streamlined approvals processes, and measures that improve the availability and affordability of low-emissions energy and carbon management solutions.'

INPEX submission (APA), 2026

The Authority has identified 3 areas where further action could unlock material abatement: fossil methane, renewable electricity supply for remote facilities, and changing facility boundary settings to better incentivise on-site abatement.

3.6.1 Fossil methane measures can address specific barriers

Coal, oil and gas facilities have opportunities to reduce fossil methane emissions through leak detection and repair, reduced flaring and venting, coal mine gas capture and ventilation air methane abatement. The Safeguard Mechanism provides a financial incentive for these activities, but uptake can depend on factors including accurate measurement, mine safety, suitable technology, regulatory approvals and institutional responsibilities.

Chapter 4 recommends a national fossil methane action plan, improved measurement and transparency, and targeted enabling and regulatory measures. These recommendations address barriers that cannot be resolved solely by changing Safeguard baselines or ACCU use.

3.6.2 Renewable electricity infrastructure can reduce remote mining emissions

Many remote mines generate electricity on-site using gas or diesel because they are not connected to a large electricity network. On-site renewable generation and storage can reduce these emissions. Deeper electrification may, however, require generation and network infrastructure beyond what an individual facility can efficiently provide.

Common-user infrastructure may lower costs where several facilities can share renewable electricity generation, transmission and related network assets. It can also address coordination problems where investment by one facility depends on investment by others.

The Western Australian Government's Pilbara Energy Transition Plan identifies priority transmission projects to connect renewable generation with major industrial users. The projects are eligible for up to $3 billion in concessional finance through the Australian Government's Rewiring the Nation program

(WA Government, n.d.). A report commissioned by the Clean Energy Finance Corporation estimated that a coordinated approach to electricity transmission and generation in the Pilbara could save more than $30 billion (Draper et al., 2025).

Facility-level investment also has an important role. For example, Fortescue is developing renewable generation, storage and transmission infrastructure for its Pilbara operations (Fortescue, 2026c). Pacific Energy completed a large off-grid hybrid electricity system at the Tropicana gold mine in 2025 (Pacific Energy, 2025).

The appropriate model (common or facility-level) will depend on the number and expected life of potential users, geography, renewable resources, electricity demand and the cost and timing of network development.

The Authority's Sector Pathways Review found that timely development of shared renewable electricity generation and transmission will be important to reducing resources-sector emissions. The Government can support this through coordinated planning with states and territories and by identifying where common-user infrastructure offers material benefits over stand-alone projects.

3.6.3 Facility-boundary rules may affect renewable electricity investment

Some facilities, particularly those in remote and off-grid locations looking to replace fossil with renewable electricity generation, may need to locate new renewable generation outside their Safeguard facility boundary because of land, resource or operational constraints.

Under current arrangements, when a facility replaces on-site fossil electricity generation with renewable electricity generated outside its facility boundary, its baseline is reduced. This can limit its ability to generate SMCs from the change. In its submission, Fortescue called for changes to facility-boundary arrangements to strengthen the incentive to invest in off-site renewable generation (Fortescue submission (APA), 2026).

The current arrangements may also weaken incentives for deploying other decarbonisation technologies where space and operational constraints mean replacement assets need to be located outside existing facility boundaries.

The Government should examine whether facility-boundary rules appropriately recognise genuine emissions reductions from off-site renewable generation while preserving the integrity of Safeguard baselines and crediting arrangements.

3.7 Timing of the Annual Progress Advice

Recommendation 4 | Change the timing of the Annual Progress Advice so the Authority can assess complete Safeguard data

Amend the *Climate Change Act 2022* as soon as possible to require the Authority to provide its annual advice by 30 June each year, following the release of final Safeguard Mechanism data in April each year.

3.7.1 Current statutory timings provide very limited opportunity for analysis and dialogue

Section 14(1) and (1A) of the *Climate Change Act 2022* currently require the Authority to provide annual advice to the Minister ahead of the Minister preparing the Government's annual climate change statement, including advice on whether the Safeguard Mechanism is reducing emissions consistently with the National Greenhouse and Energy Reporting (NGER) Act 2007. The Minister must currently prepare the annual climate change statement within 6 months of the end of each financial year (i.e. by December each year), per Section 12(1) of the same Act.

There are 2 major limitations with these current provisions:

1. The Authority's advice to the Minister on the Safeguard Mechanism excludes critical Safeguard data required to inform high-quality advice.
    - The Authority currently advises the Minister using preliminary Safeguard data received in November each year from the CER. The Authority's assessment must occur in a matter of days, as reporting entities provide their emissions data to the CER by 31 October each year (**Figure 15**). This preliminary data excludes final compliance data on SMC and ACCU surrenders, and flexible compliance measures including declarations for TEBA entities – all of which responsible entities only finalise with the CER by 31 March the following year. The CER releases the final data by 15 April each year after this 31 March compliance deadline (i.e. 9 months after the end of the last financial year).
2. The Government's ability to consider the Authority's annual advice before formulating its response is exceptionally constrained.
    - The current statutory timeframes provide the Minister with under one month to prepare a formal response to the Authority's annual advice (**Figure 15**).

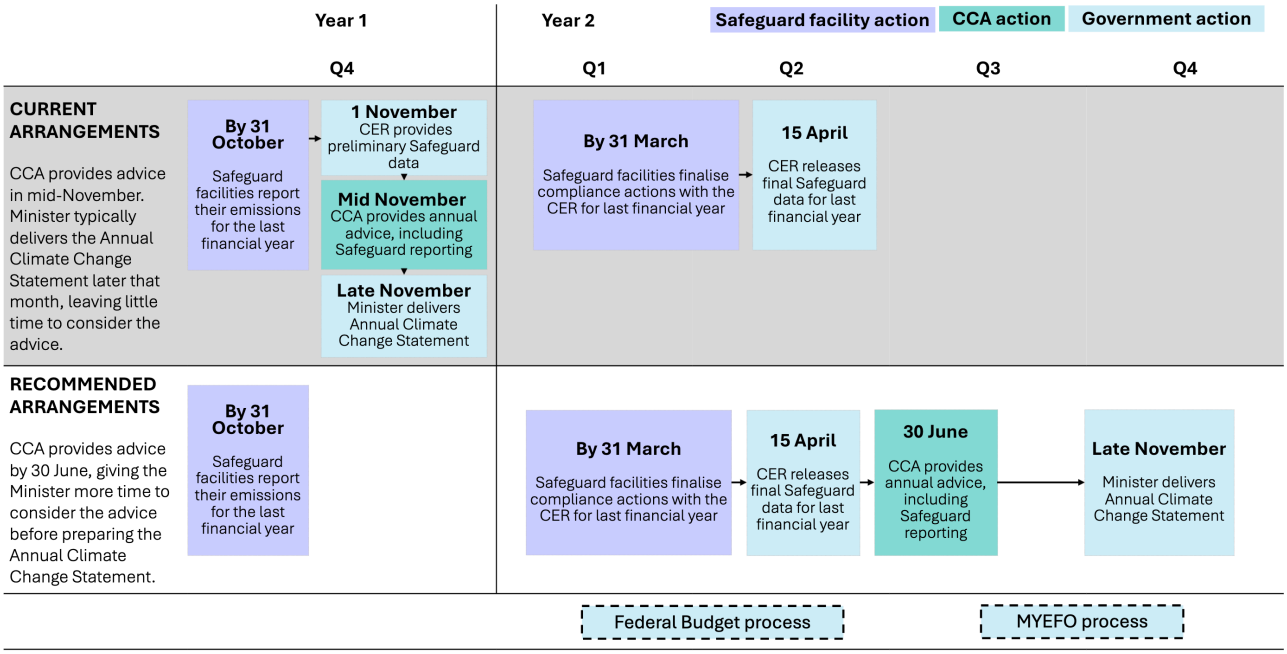
3.7.2 Amending legislative timings will allow the Authority to prepare better quality advice and enable the Minister to provide a more considered policy response

Updating the timing of the Authority's annual advice to 30 June (**Figure 15**) will improve Australia's climate policy outcomes:

Analysis of complete and final Safeguard data from April and providing annual advice by 30 June each year will allow the Authority to provide stronger advice on the Safeguard Mechanism, particularly regarding the extent of off-site and on-site abatement, as well as TEBA considerations, both of which are not fully assessed under current arrangements.

Submitting the Authority's annual advice by 30 June will provide the Minister with up to 6 months (instead of less than one month) to prepare a considered response to complex advice on long-term climate policies. It would allow more time for the Government to consider the Authority's advice on the transition to a prosperous, resilient, and equitable net zero future, and to conduct its own analysis, consult key stakeholders, and complete any relevant budget processes.

Figure 15: Comparison of current statutory arrangements and recommended amendments



The Authority suggests this amendment be incorporated as soon as possible, noting the Government has upcoming opportunities to do so through the review of the Climate Change Act 2022[18], and possible legislative changes resulting from the Safeguard Mechanism review.

3.8 Conclusion

Based on the latest available evidence, the Safeguard Mechanism remains consistent with its legislated 2030 net and gross emissions outcomes. The 2023 reforms have materially strengthened the incentive for on-site abatement and are influencing some investment decisions. It is too early to assess their full impact.

The Authority recommends the post-2030 Safeguard settings:

- align with an economy-wide emissions reduction pathway of 70% below 2005 levels by 2035
- retain compliance flexibility at this time while using targeted measures to address practical barriers to feasible on-site abatement
- target trade-exposed baseline-adjusted assistance to activities facing demonstrated and material carbon leakage risks
- move the Annual Progress Advice to 30 June each year so the Authority can use complete Safeguard compliance data and the Government has more time to consider and respond to the advice.

Taken together, these recommendations provide an effective, efficient and equitable way for the Safeguard Mechanism to make a strong contribution to Australia's 2035 target. On-site emissions reductions alone cannot deliver the Authority's recommended Safeguard abatement task by 2035. Continued access to ACCUs and SMCs means Safeguard ambition need not be constrained by what facilities can achieve on site and allows the stronger task to be delivered at lower cost than if ACCUs were restricted.

The Authority's judgement is to retain current ACCU arrangements at this time and use targeted measures to address practical barriers to on-site abatement. Implementation of the recommendations from the Authority's 2026 ACCU Scheme Review would also improve the operation and transparency of the ACCU market. Refined trade-exposed baseline-adjusted arrangements would manage material carbon leakage risks while preserving the aggregate emissions budget.

The Authority recognises that both excessive reliance on ACCUs and poorly designed restrictions carry risks.

The Authority will continue to assess the on-site response as facilities advance their abatement plans, further compliance data become available, and abatement projects progress to operation. In its 2028 review of the NGER Scheme the Authority will consider whether feasible on-site abatement is being materially delayed and why. That evidence will inform whether further targeted measures or changes to ACCU use are warranted.

18. Section 17 of the *Climate Change Act 2022* requires the first review of the Act to be completed within 5 years of its commencement, which is September 2027.



Chapter 4

Fossil methane

Chapter 4 key points

- Australia should accelerate fossil methane reductions. Methane abatement delivers enhanced climate benefits due to methane's high warming impact and short life.
- Targeted measures for coal and gas facilities would complement the Safeguard Mechanism. Removing specific barriers to on-site abatement enables the uptake of key technologies and practices, reducing reliance on offsets.
- Technology demonstration, and collaboration across regulators, would unlock more opportunities. This includes enabling pre-drainage at suitable open-cut coal mines and oxidation of ventilation air methane at underground coal mines.
- Continuous improvement of measurement and reporting supports action. It helps identify more material emission sources, improve emissions estimates and assess progress.
- We don't need to wait for every measurement and technology question to be resolved before we act. Established practices, including effective leak detection and repair at oil and gas facilities, can be applied more consistently now.

A national fossil methane action plan would coordinate delivery across the Commonwealth, state and territory governments and industry. The plan should set a national target, identify priority actions, assign responsibilities and set timeframes.

Fossil methane emissions are produced from coal mining and gas production. Fossil methane as defined by the Authority covers the fugitive methane emissions from the extraction, processing and delivery of fossil fuels to the point of final use (CCA, 2026b; IPCC, 2019).[19] Throughout 2026, the Authority consulted on practical abatement opportunities for these emissions, including barriers to their uptake and potential policy responses (CCA, 2026b). This chapter draws on submissions and input received, and the Authority's own analysis.

This chapter has 4 sections:

- Section 4.1 sets out the benefits of accelerated global action on methane, the main sources of fossil methane in Australia, and the forecast global demand shaping these emissions. It concludes that targeted action on methane can complement the Safeguard Mechanism.
- Section 4.2 identifies priority targeted actions to drive extra methane abatement in the near-term, with particular focus on leak detection and repair (LDAR) in the gas sector, and pre-drainage and ventilation air methane (VAM) abatement in the coal sector.
- Section 4.3 sets out how improvements in measurement and transparency would enhance the effectiveness of the Safeguard Mechanism, help identify further abatement opportunities, and strengthen accountability.
- Finally, Section 4.4 proposes Government work with jurisdictions to develop a national action plan including a national target to focus efforts. The action plan would coordinate delivery across jurisdictions, make responsibilities clear, and provide a framework for stronger requirements over time.

4.1 Methane reductions can help limit near-term warming

4.1.1 Australia should contribute further to global methane reduction efforts

Global temperature rise has accelerated since 2015 and is set to exceed 1.5 °C above pre-industrial levels (Foster and Rahmstorf, 2026; UNEP, 2026b). Urgent and sustained reductions across all greenhouse gases would limit how high temperatures rise, minimise the duration of overshoot and return warming to 1.5 °C (UNEP, 2026b).

Rapid global methane reductions can provide a particularly strong near-term climate benefit. Methane traps substantially more heat than carbon dioxide while it remains in the atmosphere (**Box 6**). It has an average atmospheric lifetime of around 12 years and gradually breaks down into carbon dioxide and water. The resulting carbon dioxide remains in the atmosphere for much longer. Reducing global methane emissions can therefore lower atmospheric methane concentrations in the near-term and help

19. Methane emissions from fossil fuel combustion are not discussed or included in figures and charts in this report. Direct references to fossil methane in this report do not include methane emissions from fuel combustion. Emissions data for fossil methane are taken from sector '1.B Fugitive Emissions From Fuels' in Australia's national greenhouse accounts (DCCEEW, 2026e).

limit the magnitude and duration of temperature overshoot (UNEP, 2026b).

The international community has made collective pledges to reduce methane emissions, covering around 80% of global fossil fuel production (IEA, 2026c). Key initiatives include the Global Methane Pledge, the UNEP's Oil and Gas Methane Partnership (OGMP) 2.0, the Oil and Gas Decarbonisation Charter and the Oil and Gas Climate Initiative. The Global Methane Pledge was launched in 2021, with 159 countries, including Australia, and the European Commission now participating (DCCEEW, 2022; GMP, 2026). The UNEP's Methane Alert and Response System (MARS) identifies and shares data on emissions events and large methane plumes with relevant governments and OGMP 2.0 members (UNEP, 2026c).

Further global action is needed. As demonstrated in **Table 3**, the level of targeted action on methane varies across nations, including amongst signatories of the Global Methane Pledge. Current measures are projected to cut methane emissions from the coal sector by 22% and oil and gas sector by 26% from 2020 levels by 2035 (IEA, 2026c). This falls short of the Global Methane Pledge target of 30% below 2020 levels by 2030.

Australia's trading partners are increasingly seeking fossil fuels with low production methane intensity. The EU will require fossil fuel imports to meet methane emissions intensity standards from 2031 (European Parliament, 2026). Japan and South Korea both participate in the Coalition for LNG Emission Abatement toward Net zero (CLEAN), which aims to create a lower emissions LNG supply chain (JOGMEC, 2023). Many investors are urging the metallurgical coal industry to pursue abatement opportunities and better emissions measurement, reporting and verification via the Steel Methane Programme (UNEP, 2026a).

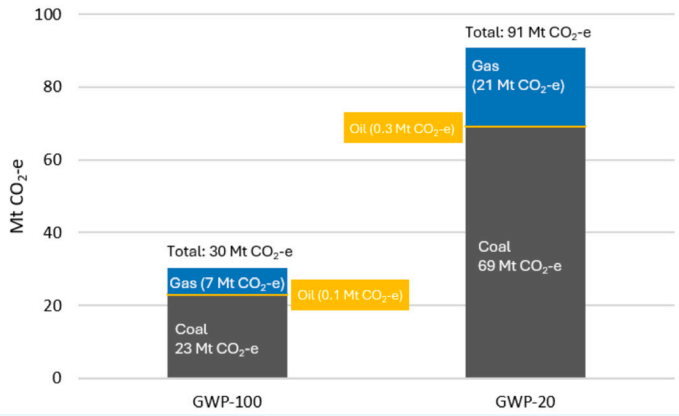
Box 6: Methane's warming effect depends on the timeframe used

Global warming potential (GWP) is a standard metric for comparing the warming impact of different greenhouse gases. It measures how much energy the emission of one tonne of a gas will absorb over a specified period, relative to one tonne of carbon dioxide. The larger the GWP, the higher the warming impact of the gas.

Because it is short-lived but powerful, methane's warming impact is much higher over shorter timeframes. Methane is around 28 times more potent than carbon dioxide when averaged over 100 years (GWP-100), but around 84 times more potent over 20 years (GWP-20) (IPCC, 2013).[20]

Because GWP-20 attributes more CO_2-e to the same physical methane reduction, it reduces the assessed cost per tonne of CO_2-e abated and changes the value assigned to methane measures (relative to GWP-100). The underlying cost of the technology and the quantity of methane reduced do not change.

Figure 16: Australian fossil methane emissions in 2024, expressed using 100-year and 20-year GWP



Source: DCCEEW, 2026e; IPCC, 2013

Note: Numbers may not sum due to rounding. The figure shows the same physical quantity of methane expressed as carbon dioxide equivalent using different global warming potentials. It does not show a change in the quantity of methane emitted. GWP-100 remains the basis for Australia's national inventory, emissions targets and Safeguard obligations. GWP-20 provides additional information about methane's near-term warming effect.

20. Australia's national inventory uses GWP values from the IPCC's Fifth Assessment Report (AR5) (DCCEEW, n.d.)

Table 3: International comparison of fossil methane measures

Country	Fossil Methane emissions (Mt CO_2-e) [21]	Coal Production (Mt)[22]	Oil and gas production (mmtoe)[23]	Global Methane Pledge signatory	Methane-specific target or plan
Australia	30	443	149	Yes	None
China	797	4,362	485	No	Methane emissions control plan includes expanding LDAR application and improving utilisation of methane from coal mines and oilfields
United States	291	524	2,044	Yes	None
Russia	170	480	1,069	No	None
Vietnam	110	47	15	Yes	30% below 2020 levels by 2030 (economy wide)
Nigeria	73	1	111	Yes	60% below 2018 levels by 2035 (oil and gas fugitives)
Brazil	52	7	232	Yes	None
South Africa	44	238	5	No	None
European Union	43	274	80	Yes	Methane action plan includes LDAR requirements, restrictions on venting and flaring and coverage of abandoned and inactive assets
Canada	38	49	467	Yes	75% below 2012 levels in 2030 (oil, gas)
Colombia	27	49	49	Yes	51% below 2019 levels by 2030 (energy)
United Kingdom	5	1	63	Yes	50% below 2018 levels by 2030 (upstream oil and gas)
Norway	1	<1	211	Yes	Methane action plan includes restrictions on venting and flaring

Sources: Argus, 2024; DCCEEW, 2026e; Energy Europa, 2022; GMP, 2026; IEA, 2023, 2026d; IGSD, 2023; Nigeria Government, 2025; UK Government, 2025; UNFCCC, n.d.; US EIA, 2026

Even as the world transitions away from fossil fuels, there is scope to reduce the emissions intensity[24] of the coal, gas and oil that is expected to be produced over the coming decades (IEA, 2025b).[25] During this time, Australian action can help shift international perceptions of what is possible and set higher expectations for other fossil fuel exporters.

'Australia should strengthen its international standing and competitiveness through active and senior level contributions to international methane efforts.'

IGCC submission (FM), 2026.

21. Fossil methane emissions were sourced from UNFCCC (n.d.) data for Annex I countries and the IEA's Methane Tracker Database (2026b) for non-Annex I countries. Australia's fossil methane emissions were sourced from the National Inventory Report 2024.
22. Coal production data for 2023.
23. Oil and gas production data for 2024. Gas production has been converted to mmtoe (million tonnes of oil equivalent).
24. Emissions intensity is the volume of emissions per unit produced.
25. Both metallurgical coal, used in steel making, and gas are generally expected to persist longer than thermal coal (used to produce electricity and heat), because they are harder to replace with low-emissions alternatives in some parts of the economy and in some markets (DISR, 2025b; IEA, 2025b).

It is also an opportunity to sustain Australia's competitiveness as scrutiny of the emissions intensity of supply chains grows. For example:

'Given Australia's position as the world's largest exporter of metallurgical coal, reducing methane emissions from the sector has the potential not only to deliver significant near-term emissions reductions, but also to help maintain Australia's competitiveness as customers, investors and regulators place increasing scrutiny on methane performance across steel value chains.'

Fidelity International submission (FM), 2026.

By implementing further policies to align its methane emission reduction efforts with its international commitments, Australia can strengthen its international standing (IGCC submission (FM), 2026). Australia has a further opportunity to step up its contribution to global methane policy as President of Negotiations at COP31, where methane emissions will be a prominent topic. Cutting fossil methane emissions is also a near-term opportunity to help meet Australia's 2030 and 2035 emissions reduction targets (CCA, 2026b) alongside deep reductions in all sources of methane emissions (CCA, 2024b).

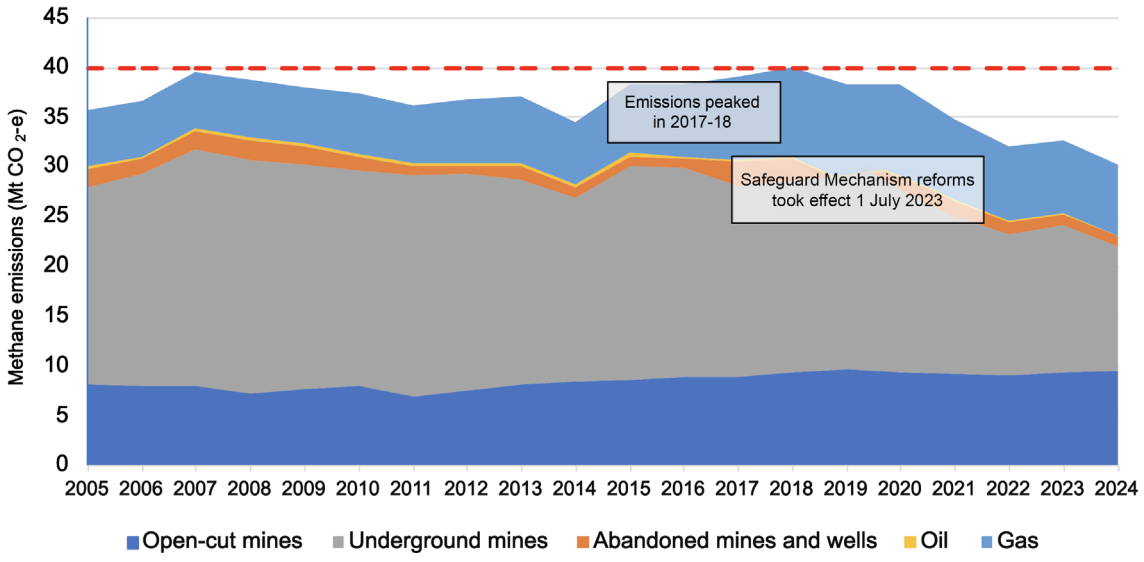
4.1.2 Domestic emissions have declined, but progress differs between industries

Australia's fossil methane emissions arise from a relatively concentrated group of industries and activities across coal mines, oil and gas facilities.[26]

In coal mining, methane naturally present in coal seams is released when the seams are disturbed and emitted through underground drainage and ventilation systems. In gas operations, methane is the main component of natural gas and is the saleable product. Methane is emitted when gas leaks or is vented, or is not fully combusted during flaring.[27] Oil production accounts for only a small share of Australia's reported fossil methane emissions so is not analysed separately, however some measures and regulatory frameworks explored here apply jointly to oil and gas activities.

Australia's reported fossil methane emissions have declined 25% from their 2018 peak (**Figure 17**). These reductions are due to the end of the 2010s LNG industry expansion, and decreasing coal production from underground mines. In 2024, reported emissions fell by around 7% from 2023 levels, when the Safeguard Mechanism reforms commenced, largely reflecting lower emissions from underground coal mining, including lower production at some mines (DCCEEW, 2026e).

Figure 17: National fossil methane emissions by source, 2005-2024

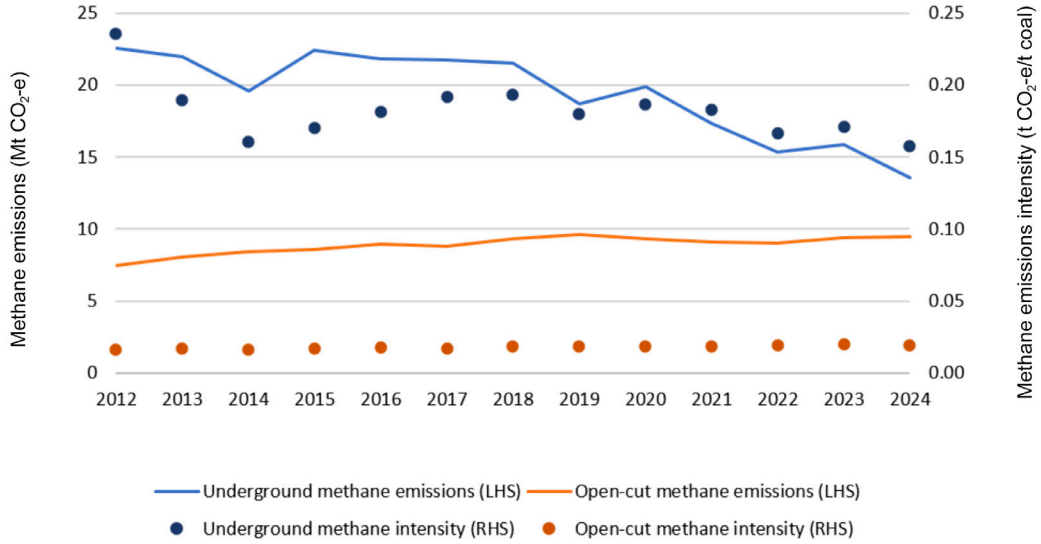


Source: DCCEEW, 2026e

26. For example, 7 coal mines contributed one third of all methane emissions reported under the Safeguard Mechanism in 2024-25, around 7.5 Mt CO_2-e (CCA analysis of CER, 2026a).
27. The chapter does not examine downstream gas distribution networks or methane emitted when fossil fuels are combusted, as these emissions volumes are much smaller than those at coal and gas production facilities (CCA, 2026b; DCCEEW, 2026e).

Longer-term trends differ between coal-mining activities. Reported methane emissions from underground coal mining peaked in 2007 and have since declined, while emissions from open-cut mining are still rising (**Figure 18**). A shift from underground to open-cut production has contributed to the reduction in total coal-mining methane emissions, as open-cut is generally less emissions-intensive (DCCEEW, 2026e).

Figure 18: Fossil methane emissions and emissions intensity of open-cut and underground coal mining



Source: DCCEEW, 2026e

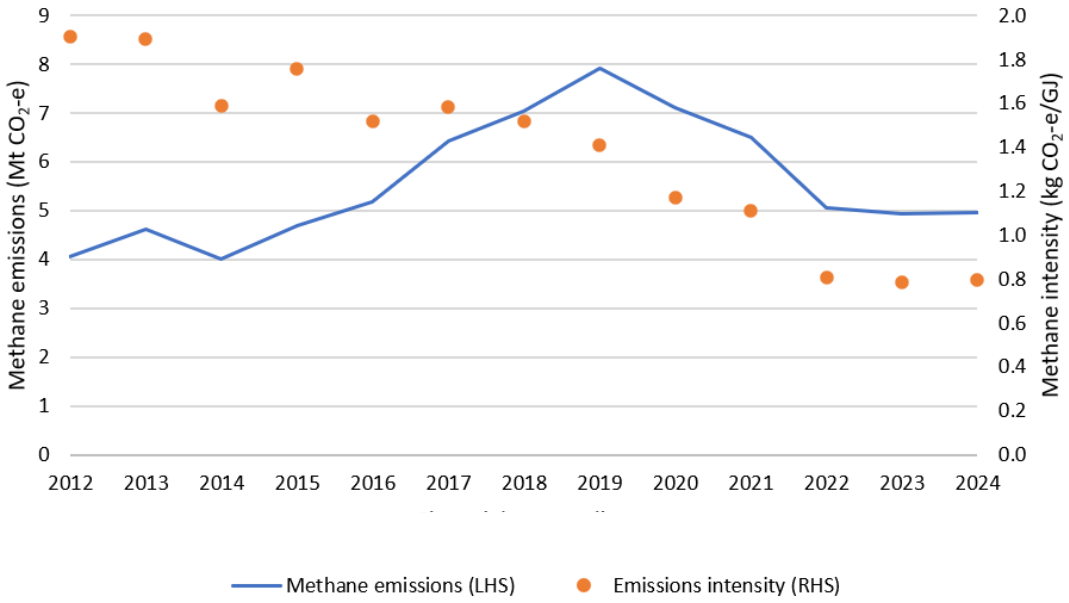
Note: Coal production refers to tonnes of raw coal. Only fossil methane emissions and industry fossil methane emission intensity are included. See Section 3.2.3 for an assessment of emissions intensity that includes all greenhouse gases, including emissions from diesel used for transport and on-site generation, from Safeguard covered facilities.

Reported methane emissions from gas production increased with the expansion of LNG production in the 2010s, peaked in 2019 and have since declined (DCCEEW, 2026e; **Figure 19**). Gas production continued to grow while reported emissions came down (DCCEEW, 2026e; DISR, 2026). This decline in emissions intensity reflects LNG developments, from commissioning and production ramp-up into steadier operation, and activities to reduce methane emissions. The CLEAN Annual Report 2025 identifies actions taken to eliminate continuous venting, improve LDAR, recover methane-containing process streams and reduce flaring (JOGMEC, 2025; Australian Energy Producers and INPEX Australia submissions (FM), 2026).

The IEA estimates that the methane intensity of Australia's upstream oil and gas production was 0.25%, well below the global average of around 1%, but well above best practice of 0.01% in Norway (IEA, 2025a; IEA, 2026d).[28] Norway's performance reflects long-standing policies and operational practices, including restrictions on non-emergency flaring and a tax on venting and flaring (IEA, 2026d; IEA, 2026f). Production characteristics, infrastructure and estimation methods can also affect comparisons between countries. Publicly reported performance varies between Australian companies and facilities, and practical methane abatement opportunities remain (JOGMEC, 2025; OGMP 2.0, 2026).

28. Methane intensity is generally higher for oil production than for natural gas production. The IEA reports a combined methane intensity by comparing methane emissions from oil and gas operations with the energy content of oil and gas production. A country's combined methane intensity therefore reflects both the performance of its operations and its mix of oil and gas production. The global average methane intensity of upstream oil and gas production was around 1% in 2024 (IEA, 2026c). The 0.01% and 0.25% figures for Norway and Australia respectively are 2025 figures (IEA, 2026d).

Figure 19: Fossil methane emissions and emissions intensity of natural gas production



Source: DCCEEW, 2026e; DISR, 2026

Note: Only fossil methane emissions and industry fossil methane emission intensity are included. See Section 3.2.3 for an assessment of emission intensity that includes all greenhouse gases, including emissions from diesel used for transport and on-site generation, from Safeguard covered facilities.

Government projections indicate that fugitive emissions from fossil fuels (which include methane and carbon dioxide) will decline modestly between 2025 and 2035. This includes emissions from new and expanding gas projects (DCCEEW, 2025a; Wood Mackenzie, 2026). Under existing policy settings, total fugitive emissions are projected to fall by around 10% over this period (DCCEEW, 2025a). Most of the projected reduction occurs in oil and gas, reflecting lower production and some on-site emissions reduction. Little overall reduction is projected from coal mining to 2035 (DCCEEW, 2025a).

The projections reflect policies and production trends in place when they were prepared, including the indicative post-2030 Safeguard baseline decline rate of 3.285% (DCCEEW, 2025a). They do not incorporate potential changes arising from the 2026–27 Safeguard Mechanism Review (which will be informed by the Authority's recommendations), and are not consistent with global action to keep warming well below 2 °C. The projections are therefore a starting point for assessing the need for stronger policy, rather than a forecast of outcomes under any future settings.

4.1.3 Targeted measures can complement a stronger Safeguard incentive

The Safeguard Mechanism gives covered facilities a financial incentive to reduce methane emissions. Facilities can reduce compliance costs, or generate Safeguard Mechanism credits, by bringing emissions below their baselines. Aligning Safeguard settings with a 70% reduction by 2035 (**Recommendation 1**) would strengthen the incentive for on-site action, including fossil methane abatement.

However, the Safeguard Mechanism values methane using its 100-year global warming potential, consistent with Australia's inventory, emissions targets and international accounting rules. Targeted measures operating alongside the Safeguard Mechanism could drive further fossil methane abatement, reflecting methane's stronger near-term warming effect. This would not change Australia's established emissions accounting arrangements.

As discussed in Section 3.4, the Authority does not recommend general caps or discounts on ACCU use at this stage. While caps or discounts could increase the general incentive for on-site abatement, it would not specifically drive fossil methane abatement – and it would tend to increase costs for all Safeguard facilities, including those without fossil methane emissions.

EYPS modelling for the Authority provided broad insights to the potential impact of targeted action on methane (EYPS, 2026). Regulatory measures calibrated to the GWP-20 value of methane abatement could increase the share of Safeguard

abatement from methane, and the overall share of on-site abatement. This would see facilities with fossil methane emissions bear a relatively higher share of compliance costs, while modestly reducing costs for other Safeguard sectors (EYPS, 2026).

A stronger Safeguard incentive and targeted methane measures therefore have complementary roles. The Safeguard provides a broad financial incentive while retaining compliance flexibility. Targeted measures would set minimum requirements where an abatement option is mature. For less established options, governments should first address barriers to implementation and collect the information needed to decide whether wider use and tighter requirements are justified.

4.2 Addressing practical barriers will unlock more fossil methane abatement

Recommendation 5 | Accelerate fossil methane abatement through targeted enabling measures and progressively stronger requirements

This should include:

a. developing a nationally consistent leak detection and repair (LDAR) framework for oil and gas facilities, mandating compliance with the framework for offshore oil and gas facilities, and supporting states and territories to introduce equivalent requirements for onshore oil and gas facilities

b. identifying opportunities for methane pre-drainage at open-cut coal mines and addressing material policy, regulatory, measurement and infrastructure barriers to their development

c. developing technical and safety guidance to enable deployment of ventilation air methane abatement at underground coal mines

d. identifying, monitoring and reducing material methane emissions from abandoned and inactive coal mines and oil and gas wells

e. comparing onshore and offshore venting and flaring practices to identify and minimise avoidable releases.

The Government should work with state and territory governments, regulatory agencies and industry on these measures, and progressively strengthen requirements over time. Requirements should use existing regulatory systems where possible.

4.2.1 Overview of key abatement measures

The Authority has identified 3 opportunities with the potential to materially reduce fossil methane emissions: more consistent LDAR at oil and gas facilities, methane pre-drainage at suitable open-cut coal mines and VAM oxidation [29] at underground coal mines. **Table 4** summarises these measures, including their readiness, applicability and cost. These opportunities would support delivery of Australia's Resources Sector Plan, specifically its objectives to reduce fugitive emissions from commodity production, including:

- demonstration of coal VAM abatement technology in Australian mines by 2030
- scaling coal VAM abatement technology in Australian mines and greater use of methane pre-drainage in coal mines by 2035
- widespread use of VAM abatement and pre-drainage technologies for coal mines by 2050 (DISR, 2025c).

LDAR is an established practice, but regulatory requirements are not nationally consistent. Pre-drainage for open-cut mines and VAM oxidation at underground mines are both commercially available in some settings, but barriers are preventing their uptake. Some applications are likely to be cost-effective under the Safeguard Mechanism, and others cost-effective only if near-term warming benefits are taken into account.

The Authority identified other important fossil methane abatement measures, including reducing avoidable venting and flaring, improving equipment and processes, increasing the capture and use or oxidation of drained coal-mine methane and managing emissions from abandoned assets. Some are already in use or are being progressed through existing Government policies and regulatory processes. The national action plan proposed in **Recommendation 7** should assess and prioritise the full set of opportunities.

29. Oxidation is the process of converting methane into CO_2 and water. Flaring and using waste gas in electricity production also oxidise methane. While these technologies reduce the short-lived climate impact of methane emissions, the resulting CO_2 persists in the atmosphere. Preventing leaks in the gas and coal sectors stops methane being emitted.

Table 4: Priority fossil methane measures differ in readiness, applicability and cost

Measure	What the measure does	Readiness and applicability	Indicative cost range ($ per tonne CO_2-e)[30]	Estimated relevant emissions, 2023–24*
Leak detection and repair at oil and gas facilities	Regularly surveying and monitoring infrastructure, equipment and components to identify leaks, followed by repair or replacement.	Established and used at some Australian oil and gas facilities. Program design, coverage and regulatory requirements vary between facilities and jurisdictions.	$-19[31] to $1 Costs depend on facility configuration, access, monitoring method and repair requirements. Where the operator can use or sell recovered gas, measures may be low or negative net cost.	**4 Mt CO_2-e from equipment leaks at production facilities.** LDAR may only address a subset.
Methane pre-drainage at open-cut coal mines	Removes methane from selected coal seams before mining. Captured methane can be used to produce energy or destroyed through flaring, depending on its concentration, composition and available infrastructure.	Emerging for open-cut mines. Applicability depends on geology, gas content, permeability, mine sequencing, lead time and integration with mining operations.	$18 to $86 (both waste gas utilisation and flaring)[32] Costs are highly site-specific. They depend on drilling and drainage performance, infrastructure, gas handling, water management, mine interaction and whether captured methane can be used. Available studies do not support one representative national cost.	**About 9 Mt CO_2-e from open-cut coal mining.** Pre-drainage may only address a subset.
Ventilation air methane (VAM) oxidation	Oxidises dilute methane in mine ventilation air, converting methane to carbon dioxide and water.	Regenerative thermal oxidation (RTO) is commercially demonstrated internationally and operated previously in Australia. Applicability depends strongly on mine-specific factors. Lower-concentration catalytic technologies remain under development and demonstration.	$6 to $27 Costs depend strongly on methane concentration, airflow, equipment scale, useful operating life and financing. International project estimates do not necessarily reflect Australian mine conditions.	**Estimated 8–10 Mt CO_2-e from ventilation air.** VAM may only address a subset of these emissions.

Source: ACARP, 2026; CSIRO, 2024a; DCCEEW, 2026e; IEA, 2026d; Regan et al., 2026; Rystad Energy, 2023; UNECE, 2025

Note: *The emissions figures relate to the broader source in Australia's National Greenhouse Accounts (DCCEEW, 2026e) to which each measure may apply. They are not estimates of technically or economically abatable emissions. Actual potential and cost depend on facility-specific factors. The pre-drainage figure includes open-cut emissions that may not be accessible through drainage. The VAM figure is an estimate because VAM emissions are not reported separately in the national inventory.

30. Cost estimates are indicative and do not apply uniformly across facilities. Estimates for gas-sector measures may assume that captured gas can be used or sold. Offshore facilities without suitable processing, storage or transport infrastructure may face materially higher costs. Costs vary with facility age, configuration and remaining operating life, and therefore, not every measure is immediately feasible or cost-effective at every site. Cost and abatement estimates are on a GWP-100 basis.
31. Where abatement activity prevents product losses, such as with LDAR, the increase in saleable product can offset the cost of abatement or create a profit, which can result in a negative abatement cost.
32. Cost range excludes costs for outlier waste gas abatement costs of between $219 and $235, which account for 1.18% of total available abatement. Converted from USD to AUD 2026 dollars.

4.2.2 A nationally consistent framework for leak detection and repair (LDAR)

Leak detection and repair is an established practice, but requirements vary across the country

LDAR is an established oil and gas practice in Australia and overseas. Programs use inspections or monitoring equipment to identify leaks from infrastructure, components and equipment, and repair or replace it where necessary. Their effectiveness depends on the sources covered, monitoring frequency, detection methods, repair timeframes, verification and how the program reflects facility risks and operating conditions (IEA, 2026c; Kolonsky and Neverov, 2023).

During the Authority's consultation process, Woodside Energy submitted that it identifies and addresses leaks through operator rounds, handheld detection and standard maintenance processes. INPEX Australia reported using gas detectors to identify leaks for investigation and repair. Both submissions emphasised that program design and repair decisions need to reflect the materiality of leaks and facility-specific access and operating constraints (Woodside Energy and INPEX Australia submissions (FM), 2026).

LDAR requirements in Australia differ between jurisdictions and asset types, meaning there is no common framework. Queensland has specific requirements to reduce safety risks through methane monitoring, leak repair and reporting, and the Northern Territory requires periodic leak inspections (Northern Territory Government, 2025; Queensland Government, 2022). Western Australia and the Commonwealth offshore regime manage emissions and environmental risks through facility-level, outcomes-based plans (Australian Government, 2023b; Western Australia Government, 2012).

Some submissions highlighted a national, consistent approach to LDAR, that can accommodate differences between facilities, could increase the uptake of these practices:

'LDAR is applied inconsistently in Australia, with different leak definitions and reporting across state and national regulations. A consistent, fit-for-purpose approach incorporating best-practice technologies would lower adoption barriers.'

Woodside Energy submission (FM), 2026.

A national framework for LDAR would improve practice and drive uptake

The Authority finds that a nationally consistent framework, designed specifically to reduce methane emissions, is warranted. The Australian Government should work with states and territories to develop a national leak detection and repair framework for oil and gas facilities. The framework would set common minimum expectations while allowing monitoring and repair programs to reflect differences between facilities.

The framework should cover:

- the facilities, equipment and methane sources subject to the requirements
- inspection frequency, based on equipment and site risks
- continuous or frequent monitoring where the risk of material leaks warrants it
- approved detection methods and performance standards
- timeframes for investigating and repairing detected leaks
- treatment of inaccessible equipment and repairs that cannot safely be completed while equipment is operating
- verification, record keeping and reporting.

The framework should not prescribe one detection method for every facility. Operators could use alternative or emerging technologies where those methods meet the agreed performance standard. This would allow monitoring approaches to mature over time without weakening expectations for detecting and addressing material leaks.

The framework should cover relevant offshore and onshore oil and gas facilities, including facilities below the Safeguard Mechanism threshold where material leak sources are present. Governments would need to determine proportionate requirements for smaller or lower-risk facilities and equipment.

The framework should be implemented through existing regulations

The framework would not itself impose legal obligations, but could be given legal effect in each jurisdiction. For offshore oil and gas facilities in Commonwealth waters, the Government could make compliance mandatory through the existing petroleum regulatory system applying to Commonwealth waters the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* and associated regulations.

The current Commonwealth framework allows for regulation of methane leaks where they present an environmental risk, and some environment plans (which are approved by NOPSEMA) include LDAR or related monitoring and maintenance controls. Those impacts and risks must be reduced to as low

as reasonably practicable and be of an acceptable level (NOPSEMA, 2024). Implementing the national framework would add consistent enforceable minimum requirements while retaining the risk-based assessment of individual facilities (NOPSEMA, 2024).

The current framework can require facilities to manage methane leaks where they present an environmental risk, and some environment plans include LDAR or related monitoring and maintenance controls. It does not set the same minimum LDAR requirements for every relevant offshore facility. Implementing the national framework would add enforceable minimum requirements while retaining a risk-based approach.

The Government would work with state and territory governments to implement national equivalent mandatory requirements for onshore oil and gas facilities through existing regulatory frameworks. These legal mechanisms may differ between jurisdictions, but each should, where possible, require the minimum outcomes set by the national framework. Using existing regulatory systems would avoid creating a separate methane regulator and requiring facilities to comply with overlapping schemes.

4.2.3 Identifying opportunities for methane pre-drainage at open-cut coal mines

Greater pre-drainage could reduce emissions at suitable open-cut mines

Once open-cut mining begins, methane is generally released across the mine area in a diffuse form that is difficult to capture or destroy. Pre-drainage removes methane from selected coal seams before mining and can make the gas available for use or oxidation. Its feasibility depends on whether drainage can produce a sufficiently concentrated and stable gas stream before mining reaches the relevant area (ACARP, 2026; Vigil et al., 2025).

Pre-drainage is an established practice at underground coal mines, primarily to support safe mining. Its application at open-cut mines is less developed. Australian trials and studies indicate that pre-drainage may be feasible at selected seams and mine areas (ACARP, 2026; CSIRO, 2024a; Regan et al., 2026).

Stakeholder views on the scale of the opportunity vary. The Investor Group on Climate Change identified pre-drainage as an important potential emissions reduction measure but noted its cost, long lead times and project-management requirements. Yancoal emphasised that geology, gas content, mine design, safety, infrastructure, approvals and emissions-accounting rules affect its practicality. The Mining and Energy Union similarly described open-cut drainage as an emerging field requiring further investigation and demonstration before broad deployment (IGCC, Yancoal and Mining and Energy Union submissions (FM), 2026).

Pre-drainage requires investment well before the associated coal is mined and earns revenue. Drilling, gas handling and supporting infrastructure may need to be developed several years in advance. This gap between project costs and later coal revenue can weaken the investment case even where pre-drainage is technically feasible (IGCC submission (FM), 2026).

Stakeholders also raised uncertainty about how pre-drainage would be reflected in emissions reporting and Safeguard outcomes. NGER Method 2 allows a mine's emissions model to account for captured or flared methane (CER, 2026g). In principle, methane removed before mining can therefore reduce the emissions later estimated for the relevant coal. Industry submissions nevertheless identified uncertainty about how operators would demonstrate the relationship between methane captured from a future mining area and the later emissions estimate for that area (Yancoal submission (FM), 2026).

Governments and operators should identify viable open-cut pre-drainage projects and address material barriers

Governments should work with mine operators, technology providers and researchers to identify open-cut mines and mine areas with sufficient gas content, permeability and lead time to support viable pre-drainage projects.

For each potential project, the assessment should consider:

- geological conditions and expected drainage performance
- interaction with mine design, sequencing and drill and blast activities
- lead time and access for drilling
- gas gathering, treatment and transport infrastructure
- water management
- options to use or oxidise the captured methane
- safety, environmental and resources approvals
- treatment of the resulting emissions reductions under the NGER Scheme and the Safeguard Mechanism.

DCCEEW's current review of NGER Method 2 provides an opportunity to clarify how methane removed before mining should be reflected in a mine's emissions estimate. Method 2 already allows

captured methane to be accounted for, but operators need clear and auditable requirements for sampling, attribution, timing and integration with mine models. The review should determine whether changes to the Measurement Determination are needed or whether clearer guidance would be sufficient (DCCEEW, 2026u).

The Government should coordinate this work with the Queensland and New South Wales governments, which regulate the main open-cut coal mining regions. The assessment should identify which issues can be addressed through technical guidance, the Method 2 review, existing approval processes or infrastructure coordination. Policy or regulatory changes should be considered where a demonstrated barrier is preventing an otherwise viable project from proceeding.

The results would help governments determine whether pre-drainage requirements are warranted at particular mines or mine areas. Requirements should reflect where pre-drainage can operate safely, produce material emissions reductions and be reflected reliably in emissions reporting.

4.2.4 Developing technical and safety guidance to enable deployment of VAM oxidation

VAM oxidation technologies must be proven under Australian conditions

Underground coal mines use large volumes of fresh air to keep methane concentrations within safe limits. This produces ventilation air containing a large volume of methane at low and variable concentrations. Methane concentration, airflow and remaining mine life are important factors in whether a project to oxidise the VAM can operate effectively and recover its costs (CSIRO, 2024a; Regan et al., 2026).

Methane concentrations vary between mines, ventilation shafts and over time. Available 2020–21 data indicate that around 46% of estimated Australian ventilation flow had methane concentrations between 0.2% and 0.4%. Around 23% was below 0.2%, and about 21% was above 0.4% (Regan et al., 2026). These differences affect which technologies may be suitable and whether supplementary energy is needed.

Regenerative thermal oxidation is commercially demonstrated internationally and has previously operated in Australia (Heggies, 2008; NSW Government, 2021). Conventional systems generally perform better where methane concentrations are sufficiently high and stable. Catalytic oxidation is a separate, less mature technology pathway being developed for lower methane concentrations. If successfully demonstrated, it could extend abatement to mines where methane concentrations are too low for conventional systems (International Mining, 2026). Australian projects are examining these 2 technology pathways:

- The Kestrel mine project in Queensland and Appin mine project in New South Wales are demonstrating regenerative thermal oxidation. The Kestrel project has Australian Government support through the Powering the Regions Fund and is being developed in stages, beginning with engineering design (DISR, n.d.; Kestrel Coal Resources, 2025). The Appin project is intended to provide longer-term evidence on operating performance, safety controls and integration with mine ventilation systems. The New South Wales Government has provided $15 million for the project (NSW Resources, 2026).
- CSIRO's CataVAM technology uses a catalyst to oxidise methane at a lower temperature than conventional thermal oxidation. A field trial at Appin reportedly destroyed more than 98% of methane in real mine ventilation air. Earlier pilot work demonstrated operation at concentrations around 0.1% to 0.13%, while also identifying heat management and equipment issues requiring further development (CSIRO, 2024b, 2026a).

Safety is central to the wider deployment of both technologies. Oxidation systems need to be integrated with mine ventilation so that fire, explosion or pressure risks cannot propagate back into underground workings. Technology proponents pointed to international operation and Australian trials as evidence of potential, while industry and workforce submissions emphasised the need for further demonstration under Australian conditions (Mining and Energy Union and LETA submissions (FM), 2026).

Addressing barriers to VAM uptake

Given the scale of VAM emissions, the priority is to resolve remaining barriers to deployment of oxidation technologies so they can be deployed. Current Australian trials should inform where the technologies can operate safely and effectively and the technical and safety guidance needed to support deployment. Increased transparency of facility-level VAM concentrations would also improve assessment of where different technologies may be applicable, and where stronger requirements could be applied.

Project results should be published in enough detail to assess:

- integration with mine ventilation and safety systems
- heat, ignition, shutdown and emergency controls

- performance across the methane concentrations and airflow tested
- operating reliability and maintenance needs
- energy use and any supplementary fuel requirements
- capital and operating costs
- requirements for mine safety approval and commercial-scale deployment.

State mine safety regulators will need sufficient evidence that a proposed installation does not impede ventilation, create unacceptable ignition or fire risks, or reduce the mine's ability to respond to changing methane concentrations and emergencies.

Through the national fossil methane action plan (refer to Section 4.4), the Australian Government should convene state mine safety and environmental regulators, mine operators, technology providers and researchers to examine the Australian project results and relevant international experience and develop consistent technical guidance. The guidance should cover system design, separation from mine workings, heat and ignition controls, shutdown and emergency procedures, monitoring, maintenance and interaction with ventilation systems.

The concentration data proposed in Section 4.3.6 would help identify mines and ventilation shafts that may suit each technology. Governments could then work with operators to identify candidate projects and determine whether any safety, technical, approval or reporting issues remain.

Evidence from the Australian projects, technical guidance and candidate projects would provide a basis for deciding whether stronger requirements are warranted.

4.2.5 Addressing methane emissions from inactive, decommissioned and abandoned assets

Inactive, decommissioned and abandoned assets present different policy problems. Where an identifiable operator remains responsible, existing reporting, environmental and rehabilitation requirements may continue to apply after production ceases. The more difficult issues arise for older abandoned, orphaned and legacy assets, where records may be incomplete, responsibility may be unclear or no viable operator remains. The discussion below therefore focuses mainly on these assets.

The scale and distribution of emissions from legacy assets are not well established. Australia's National Inventory Report 2024 estimated methane emissions of around 1.0 Mt CO_2-e from abandoned underground coal mines and 0.01 Mt CO_2-e from abandoned oil and gas wells in 2023–24 (DCCEEW, 2026r).

The estimates draw on different methods and data sources. The inventory has incorporated additional facility information for abandoned underground mines, but uncertainty remains where site-specific measurements or complete asset records are unavailable.

A 2025 study measured a large methane release from one abandoned coal exploration hole in Queensland, showing that individual legacy boreholes can be material and may warrant investigation (Hoerning et al., 2025). The study does not establish that emissions from abandoned assets are systematically underestimated across Australia, but it indicates that current estimates and records may not identify every material source.

Incomplete historical records add to the uncertainty. Earlier research identified gaps in information about legacy coal boreholes, while the NSW Chief Scientist and Engineer found that historical wells may have been constructed or abandoned under older standards and that orphaned assets require a different response where no operator can be held responsible (Day et al., 2015; NSW Chief Scientist and Engineer, 2014). The NSW review also found that properly designed and abandoned modern petroleum wells generally present a low risk of failure, although evidence about integrity over very long periods is limited.

The Australian Government should work with state and territory governments to establish a coordinated approach to these assets. The work should:

- bring together existing records of inactive, decommissioned and abandoned coal mines, petroleum wells and relevant coal exploration boreholes
- identify gaps in location, ownership, condition and regulatory status
- use existing information and targeted measurement to screen for potentially material methane sources
- investigate priority sites to confirm the source and scale of emissions
- clarify monitoring and remediation responsibilities, including where a former operator or titleholder remains responsible
- establish proportionate responses for orphaned and legacy assets where no viable operator remains
- use measurement results to review national inventory methods and underlying datasets.

Relevant findings from the Expert Panel's final advice could inform whether atmospheric measurement

can help identify priority sites, but source-level investigation would still be needed before remediation decisions are made.

The action plan should assign responsibility for coordinating this work and set priorities and timeframes. It should also identify how work on orphaned assets will be funded where no viable operator remains, while retaining operator responsibility where an accountable entity can reasonably be identified.

4.2.6 Identify and minimise avoidable venting and flaring

The Government has committed to work with regulators and industry to reduce and, where possible, eliminate venting and flaring unless required for safety (DISR, 2024, 2025a, 2025c).

The Government's 2025 offshore policy statement explains how titleholders, NOPSEMA and NOPTA are expected to pursue this commitment through the existing Commonwealth offshore petroleum framework. It expects titleholders to minimise venting and flaring through project design and continuing operational improvements. It also explains how safety and environmental requirements, including obligations relating to as low as reasonably practicable and good oilfield practice, apply to these activities.[33] The statement applies only to offshore petroleum facilities in Commonwealth waters where the Government has jurisdiction.

State and territory petroleum, safety and environmental frameworks also regulate venting and flaring from onshore facilities. Queensland, Western Australia and the Northern Territory use different combinations of approvals, management plans, reporting requirements and resource-management obligations. Queensland's framework, for example, restricts flaring where gas can be commercially and technically used and generally favours flaring over venting where release is necessary and safe (CCA, 2026b).

The Government should monitor titleholders, NOPSEMA and NOPTA giving effect to the offshore policy and whether avoidable venting and flaring decline. The additional information on venting and flaring discussed in Section 4.3.3 would help assess progress. Through the national fossil methane action plan (Section 4.4), the Government should work with state and territory governments to compare existing onshore policy and reporting arrangements for venting and flaring and clearly distinguish between routine, non-routine and safety operations. Concerted action is required to minimise routine events and preserve those events that are tied to legitimate emergency and process-safety operations.[34] The focus should be on releases that can reasonably be avoided through better equipment, operating practices or gas recovery.

33. 'Good oilfield practice' is defined in the Offshore Petroleum and Greenhouse Gas Storage Act (Australian Government, 2006) and the concept of environmental impact and risk reduction to 'As Low as Reasonably Practicable' is applied in the offshore oil and gas environmental management regulatory arrangements.
34. Some venting and flaring can occur during start-up, maintenance, equipment failure and emergency depressurisation to protect workers and facilities.

4.3 Better measurement and transparency would support fossil methane abatement

Recommendation 6 | Improve and publish more information about fossil methane emissions and abatement

This should include:

a. publishing fossil methane emissions using both 20-year and 100-year global warming potentials

b. requiring Safeguard facilities with material fossil methane emissions to submit rolling 5-year methane abatement plans each year to the Clean Energy Regulator for publication

c. publishing more granular information about material fossil methane sources and the methods used to estimate them

d. improving the reporting of and response to large or unusual methane releases

e. progressively improving the precision of NGER methods by incorporating on-site measurement

f. establishing consistent reporting of average ventilation air methane concentrations at underground coal mines.

Changes should be made through the NGER Scheme where possible and avoid unnecessary duplication.

The NGER Scheme provides Australia's national framework for corporate and facility emissions reporting. Recommendation 6 builds on reforms made and underway following the Authority's 2023 NGER review. It would make fossil methane information more useful for policy and regulatory decisions, investment and public accountability. New requirements should use existing NGER systems where possible and recognise equivalent disclosures that provide the required facility-level information.

4.3.1 Publish fossil methane emissions using both 20-year and 100-year global warming potentials

Australia's national inventory, emissions targets and Safeguard Mechanism obligations use 100-year global warming potentials, consistent with international emissions accounting. As explained in Section 4.1, publishing fossil methane emissions using a 20-year global warming potential would provide additional information about methane's near-term warming effect.

The Clean Energy Regulator should be made able to publish fossil methane emissions using both 20-year and 100-year global warming potentials for:

- Safeguard Mechanism facilities with fossil methane emissions
- the annual NGER data highlights and associated datasets.

The Clean Energy Regulator could calculate the 20-year figures from methane data already reported under the NGER Scheme. There is no need for additional reporting by facilities.

Dual publication would allow governments, companies, investors and the public to see methane's near-term warming effect alongside the measure used for formal accounting. It would also inform the prioritisation of methane measures under the national action plan.

'More transparent reporting of [methane's] potency is needed to better reveal the climate effects of activities…so that more finance can be deployed in pursuit of near-term decarbonisation.'

IGCC submission (FM), 2026.

The 100-year global warming potential would remain the basis for Australia's national inventory, economy-wide emissions targets and Safeguard Mechanism compliance.

4.3.2 Require Safeguard facilities to submit rolling 5-year methane abatement plans for publication

The NGER Scheme collects information on facilities' historical emissions but does not provide a consistent forward view of expected fossil methane emissions or planned abatement. Under the Safeguard Mechanism, a facility surrendering ACCUs equal to more than 30% of its baseline must provide a statement explaining why more on-site abatement did not occur. These statements apply after the reporting year rather than explain planned methane measures (CER, 2026a).

The Authority recommends Safeguard facilities with material fossil methane emissions submit rolling 5-year methane abatement plans to the Clean Energy Regulator. The plans would identify the facilities' main methane sources, expected emissions, measures already underway and further

measures planned or under consideration. They would also report anticipated timing, the expected emissions effect of each measure and progress against the previous plan. These plans would provide a consistent, forward-looking account of methane abatement pathways at the facility level, against which progress and action could be assessed. Existing compliance requirements do not provide this level of accountability.

The CER should publish these plans. This would strengthen the evidence base on abatement opportunities and help identify where further Government action may be needed. The plans would also help the Government and the Authority track delivery of the national fossil methane action plan and assess how facilities are responding to the Safeguard Mechanism.

The Authority has previously recommended that Safeguard facilities publish strategies setting out how they expect to meet their declining baselines (CCA, 2024a). The Government agreed in principle and said details were best considered in the context of the 2026–27 Safeguard Review (DCCEEW, 2024a). If established, this broader requirement should incorporate the methane information proposed here.

Some information supporting a plan may have genuine commercial value. The existing NGER process allows a company to ask the Clean Energy Regulator not to publish specified information that would reveal a trade secret or could reasonably be expected to diminish the value of commercially sensitive information (CER, 2026e). The same approach should apply to methane abatement plans.

The Authority is mindful that new reporting obligations should be implemented in a simple, efficient way to avoid unnecessary compliance burden (Productivity Commission, 2026). Facilities should be able to use an existing public report where it contains the required facility-level information. They could provide an addendum for any missing elements. This would reduce duplication with climate-related financial disclosures and other reporting requirements. The NSW Environment Protection Authority has adopted a similar approach for climate change mitigation and adaptation plans (NSW EPA, 2026b).

4.3.3 Publish more granular information about methane sources and estimation methods

The Authority has previously recommended making more information collected through the NGER Scheme publicly available, to improve policy analysis, public accountability and understanding of emissions trends (CCA, 2023).

This included facility emissions split by greenhouse gas, and the methods[35] used to estimate emissions.

The Government has begun implementing this advice. The Clean Energy Regulator now publishes total methane emissions for Safeguard Mechanism facilities and the methods used to estimate emissions from relevant NGER emissions sources. However, the published data do not yet show the amount of methane attributed to each source (CER, 2026b).

The *Carbon Credits and Other Legislation Amendment (Integrity and Transparency) Bill 2026* would allow regulations to specify additional NGER information for publication. This would provide a pathway for implementation (Australian Parliament, 2026; DCCEEW, 2026f).

The new publication requirements should include the amount of methane attributed to each material NGER emissions source at a Safeguard Mechanism facility. This would show, for example, how much of a facility's reported methane came from flaring, venting, equipment leaks or coal extraction.

The publication should also identify material changes in the source categories or estimation methods used from one year to the next. This would help data users interpret whether changes in reported emissions at a facility reflect operations, abatement or a change in estimation method.

4.3.4 Improve the reporting of and response to large or unusual methane releases

Large or unusual methane emissions events may require action before annual NGER reports are available. They can arise from equipment failures, unintended venting, flare failures, well incidents or coal mine events. Atmospheric monitoring can now detect unexpectedly high or persistent emissions that warrant investigation, although it generally cannot reliably identify the specific source or quantify annual emissions (DCCEEW, 2026l; UNEP, 2026c).

Prompt notification should continue through the existing safety, environment and resources regulators responsible for the activity. Depending on the activity and location, this may include NOPSEMA, NOPTA, NEPA or state and territory regulators. The national fossil methane action plan should make clear which events or observations require notification, which regulator leads the response and how agencies share information.

35. Methods are prescribed approaches for calculating emissions and energy data reported under the NGER Scheme, as set out in the National Greenhouse and Energy Reporting (Measurement) Determination 2008.

The process should cover the information needed about the source, cause, duration and estimated emissions, together with responsibilities for investigation, corrective action and public reporting. Relevant information should be shared with the Clean Energy Regulator to help ensure material releases are properly reflected in annual NGER reports.

The Government should also consider whether to require reporting of more information about the circumstances of venting and flaring. Useful distinctions could include routine operations, planned activities such as maintenance or start-up, unplanned events and releases needed to manage safety. The Clean Energy Regulator, NOPTA and NOPSEMA collect information for different regulatory purposes. The Government's offshore venting and flaring policy statement notes limitations and inconsistencies in the information available, particularly integrated offshore and onshore operations (DISR, 2025a). Requirements should be harmonised to increase consistency, and information sharing arrangements established between regulators where possible, rather than requiring facilities to submit the same information multiple times.

Publishing this context alongside the annual emissions proposed above would help the Government identify avoidable releases and assess progress towards its commitment to reduce and, where possible, eliminate venting and flaring unless required for safety (DISR, 2024, 2025c).

4.3.5 Progressively improve the precision of NGER methods by incorporating on-site measurement

Estimates of fossil methane emissions made under the NGER Scheme draw on a mix of facility data, engineering calculations, prescribed emissions factors and direct measurement. New top-down measurement approaches can provide additional evidence about the location and scale of methane emissions.

The Expert Panel on Atmospheric Measurement of Fugitive Methane Emissions in Australia (the Expert Panel) is examining how atmospheric measurements could improve estimates of fugitive methane emissions and what role they could play in the NGER Scheme and Australia's National Greenhouse Accounts (DCCEEW, 2026l).

Improving measurement is especially important where it would not only increase the accuracy of national emissions estimates but also help to drive abatement at the facility level.

Existing methods do not always reflect changes in actual emissions

Reported emissions need to reflect genuine changes at facilities. Otherwise, the Safeguard Mechanism may not fully reward on-site abatement, and governments cannot reliably assess how much abatement has occurred.

For example, in parts of the oil and gas sector, methods based on prescribed emissions factors may produce the same estimate despite differences in equipment, operating practices or actual emissions. This can prevent reported emissions from reflecting the effect of on-site abatement action. For example, Method 1[36] for natural gas liquefaction, storage and transfer applies the same emissions factor to each facility, irrespective of the facility's equipment and methane management practices (Australian Government, 2008). In 2024–25, 75% of LNG facilities covered by the Safeguard Mechanism used this method (CER, 2026b). Higher-order NGER methods are more precise but many still rely on emission factors so are limited in their ability to demonstrate abatement.

Woodside Energy submitted that where measured methane reductions are not reflected in NGER systems and resulting Safeguard Mechanism compliance costs, decisions to invest in abatement may depend mainly on a company's voluntary commitments.

'Reporting reform to adopt more measurement-based methods could help align regulatory incentives with efficient abatement opportunities.'

Woodside Energy submission (FM), 2026

Incorporating ground-based, top-down measurement into existing bottom-up NGER estimation methods could improve the precision of reported emissions and allow companies to demonstrate abatement in their reporting, particularly for measurement of methane leakage in the gas sector.

Open-cut coal mines covered by the Safeguard Mechanism are required to use Method 2 or Method 3 from 2026–27. Method 2 uses a mine-specific model and allows methane captured before mining to be reflected in the facility's emissions estimate. As discussed in Section 4.2.3, the current review of Method 2 provides an opportunity to clarify how pre-drainage should be represented and whether the method or supporting guidance needs further improvement (DCCEEW, 2026u) to ensure the Safeguard provides an effective incentive to abate.

36. Method 1, 2, 3 and 4 refer to the hierarchy of established methods used in the NGER Scheme, with 1 the simplest and 4 the most rigorous (and resource-intensive) approach.

Underground coal emissions are directly measured under Method 4, but mine operators can use periodic or continuous emissions measurement. Periodic measurements may not represent annual emissions accurately where methane concentration or ventilation airflow varies substantially over time. The Government should consider requiring continuous monitoring at mines where periodic measurement cannot provide a representative annual estimate. The Expert Panel's final advice may also inform whether atmospheric measurements could be used to help validate underground mine estimates or identify emissions that require further investigation.

Some measurement reforms are underway

The Government is progressing reforms to NGER methods, including for material fugitive methane sources where possible, following the Authority's 2023 NGER Review (CCA, 2023; DCCEEW, 2024b). For open-cut coal mines covered by the Safeguard Mechanism, Method 1 has been phased out and Method 2 is under review[37]. The Expert Panel's final advice, due in June 2027, will inform the next stage of reform (**Box 7**).

Box 7: What the Expert Panel's interim findings mean for emissions reporting

The Government established the Expert Panel on Atmospheric Measurement of Fugitive Methane Emissions in Australia in response to a recommendation in the Authority's 2023 NGER review (DCCEEW, 2026l).

The Expert Panel is assessing whether atmospheric measurement, or 'top-down'[38], approaches could improve estimates of fugitive methane emissions from coal, oil and gas activities under the NGER Scheme and Australia's National Greenhouse Accounts. Its final advice is due in June 2027.

The Expert Panel's interim report finds that top-down approaches have the potential to strengthen emissions estimation, verification, quality assurance and compliance (DCCEEW, 2026k). However, their appropriate roles will differ according to the source and intended use case. No single approach can detect and quantify all sources under all conditions. Combinations of top-down and existing bottom-up methods are likely to be needed.

The report notes advancements made in measurement technology and approaches, including through the Oil and Gas Methane Partnership (OGMP) 2.0. The Expert Panel emphasises that OGMP 2.0 cannot be adopted wholesale for NGER systems. Its methods and experience can inform NGER reform, but would require careful adaptation to meet Australia's regulatory, comparability and audit requirements. The NGER Scheme requires methods that are sufficiently transparent, consistent and verifiable to support regulation, compliance and audit. Top-down approaches can also face difficulties attributing detected methane to prescribed sources within individual facilities, particularly where sources are diffuse, intermittent, clustered or mixed with other methane sources.

The Expert Panel notes that ground-based approaches may be useful for characterising temporal variability of emission sources and supporting annualisation of emissions estimates. Airborne approaches show promise for detecting smaller emissions across large areas and for periodic facility-level assessment. Satellite approaches are well suited to identifying large emission events and understanding emissions at regional scales, but are not yet sufficiently mature to support facility-level emissions reporting on their own.

Ongoing work to improve NGER methods should not delay the methane abatement measures recommended in this chapter. Governments, regulators and facilities can progress established measures such as LDAR and continue work on pre-drainage and VAM while the Expert Panel completes its advice. Better reporting methods remain important so that genuine emissions reductions are recognised under the NGER Scheme and reflected in Safeguard Mechanism outcomes.

4.3.6 Establish reporting of underground mine ventilation air methane concentrations

Methane concentration is a key factor in determining whether VAM oxidation can operate effectively at an underground coal mine. Concentrations vary between mines and over time, and different technologies

37. For more information on the status of the Government's implementation of Authority's 2023 NGER Review recommendations see Appendix D in the Authority's issues paper 'Fossil Methane: A near-term abatement opportunity'.
38. Bottom-up approaches estimate emissions from individual sources, activities or equipment and aggregate them to a facility total, whereas top-down approaches infer facility or region wide emissions from atmospheric measurements.

operate across different concentration ranges, as discussed in Section 4.2.4.

The Government should require underground coal mines to report average VAM concentrations using a consistent metric under the NGER Scheme. Detailed design should consider whether a single mine-wide average provides enough information or whether reporting is needed for individual ventilation shafts. The requirement should also specify the averaging period and treatment of changes in airflow and concentration over the year. This would help governments assess where different technologies may be suitable, interpret the results of Australian trials and estimate the potential for wider deployment.

4.4 A national action plan would coordinate delivery

Recommendation 7 | Establish a national fossil methane action plan by the end of 2027

The action plan should:

a. include a national target for reducing fossil methane emissions

b. identify a lead area within the Australian Government responsible for delivery of the plan, working with jurisdictions and industry

c. identify priority actions, responsibilities and implementation timeframes, taking account of emissions reduction potential, implementation costs, technology readiness and the near-term warming benefits of reducing methane emissions

d. set out a pathway for progressively stronger abatement obligations.

The Australian Government should work and consult with states and territories in developing the action plan.

4.4.1 The action plan would assign responsibility and set a delivery timetable

Responsibility for fossil methane policy is shared across the Australian, state and territory governments. Different agencies oversee emissions reporting, the Safeguard Mechanism, offshore petroleum activities, mine safety, environmental regulation and abandoned assets. A national action plan would bring this work together and make responsibilities clear.

An identified lead area within the Australian Government should coordinate delivery, track implementation and report on progress. This area would work with Commonwealth regulators and scientific bodies, state and territory agencies and mine safety regulators. Existing ministerial forums could support cooperation between governments.

Development of the action plan should not delay progress on immediate priorities such as the national leak detection and repair framework, improving reporting and progressing methane measurement. The completed plan would assign responsibility and set timeframes for the remaining actions in **Recommendations 5 and 6**, including further work on open-cut mine pre-drainage, VAM and abandoned assets.

'The success of [joint problem solving for abatement] rests in part on a nominated national government agency taking up a funded coordination role, bringing together those able to jointly solve engineering and safety constraints and incorporate the latest technologies.'

IGCC submission (FM), 2026.

The action plan would build on the Australian Government's Resources Sector Plan, which identifies reductions in fugitive emissions as a priority, including greater use of methane pre-drainage and the development of ventilation air methane abatement at coal mines. The fossil methane action plan would translate this general policy direction into specific responsibilities, timeframes and regulatory work. It should complement the Safeguard Mechanism Review and relevant environmental and resources reforms.

Box 8: International approaches combine national coordination with targeted action

Other jurisdictions use national plans to drive and coordinate methane action across sectors and regulatory systems. These plans can bring together existing and planned measures, set national ambition, and provide direction for new measures.

- Canada's methane strategy covers oil and gas, agriculture and waste.[39] Canada estimates that its existing and planned measures will reduce domestic methane emissions by more than 35% from 2020 levels by 2030. The strategy brings together regulation, emissions measurement, technology development and cooperation with provinces and territories. Canada describes the strategy as a planning and information-sharing tool, with emissions reductions delivered through the underlying measures rather than the strategy itself (Government of Canada, 2022).
- The United Kingdom's methane action plan summarises the domestic and international measures being used to reduce methane. It sits alongside the United Kingdom's carbon budgets and economy-wide net zero target. It is supported by the North Sea Transition Deal, from which a methane target was set for 50% emissions reductions by 2030 from 2018 levels for the oil and gas industry in the North Sea. The United Kingdom does not have a separate national methane target, although methane reductions remain part of its statutory emissions task (UK Government, 2025; OEUK, 2021).
- The European Union's methane regulation combines measurement and reporting requirements with controls aimed at particular emissions sources. The regulation requires regular leak detection and repair at oil and gas facilities, restricts routine venting and flaring, and covers inactive and abandoned oil, gas and coal assets (European Union, 2024).

These approaches cannot be transferred directly to Australia, as Australia's emissions profile and economy is different, with coal mining accounting for most reported fossil methane emissions. They nevertheless show international approaches to setting national approaches for coordinating action while implementation occurs through policies and regulatory systems suited to each emissions source.

4.4.2 A national fossil methane target would strengthen the action plan

Targets are important. They focus attention, provide clear direction for policy and a basis for assessing progress. A national fossil methane target would establish the intended outcome, while the action plan would specify the measures, responsibilities and milestones for delivery.

The target would complement Australia's economy-wide emissions targets and the Safeguard Mechanism, giving greater visibility to methane's near-term warming effect.

The Global Methane Pledge provides international context. Participating countries aim collectively to reduce global methane emissions by at least 30% from 2020 levels by 2030. The pledge covers all methane sources so does not directly translate into a target for Australia or for fossil methane. An Australian fossil methane target would need to reflect domestic emissions sources, the measures available and existing policy settings.

Submissions differed on the merits of a national target. Industry submissions cautioned that a target could duplicate existing emissions policy or lead to similar requirements being applied to facilities with very different abatement opportunities.

'If methane-specific targets are considered, they should recognise differences in methane intensity, remaining abatement potential, and facility-specific circumstances.'

INPEX Australia submission (FM), 2026.

'The CCA should avoid recommending methane-specific targets, obligations, or policy approaches that would, in practice, alter the relative treatment of greenhouse gases under the Safeguard Mechanism'

Australian Industry Greenhouse Network submission (FM), 2026.

Others argued that a target would focus Government effort, guide regulation and give investors a clearer signal.

'[Methane] targets should feed into Australia's 2035 and 2050 greenhouse gas targets'

Environmental Defense Fund submission (FM), 2026.

'Australia should establish binding, sector-specific targets and policies for fossil methane reduction

39. Fossil methane was approximately 42% of Canada's methane emissions in 2021.

to operationalize its commitment under the Global Methane Pledge'

Smart Energy Council submission (FM), 2026.

Stakeholder concerns can be addressed through the design of the target and action plan. A national target need not (and should not) translate into a uniform reduction requirement for every facility. The action plan can apply different measures to coal mining and oil and gas activities and take account of where particular technologies can be used safely and at reasonable cost.

The Authority will undertake further analysis in 2027 and advise on the target's scope, level and timeframe. That work will draw on improved emissions data, Australian technology trials, Government projections and analysis of the potential and cost of different measures.

4.4.3 Progressively strengthen methane abatement requirements

The national fossil methane action plan should identify the measures and facilities where regulation is warranted, assign responsibility for developing the requirements and set indicative timeframes for their introduction.

The timing and form of regulation would differ between measures. Governments should:

- implement mandatory offshore and onshore LDAR requirements once the national framework is agreed
- consider targeted pre-drainage requirements at open-cut mines or mine areas where project assessments show that pre-drainage can operate safely and achieve material emissions reductions
- prepare ventilation air methane requirements as Australian projects establish where the technologies can be safely integrated with mine ventilation systems
- strengthen requirements for other methane sources as the action plan identifies workable measures and gaps in existing regulation.

Design work can begin before every implementation issue has been resolved. Commencement dates and transitional arrangements should allow identified safety, measurement, accounting, infrastructure and regulatory issues to be addressed before the relevant obligations take effect. This should not delay requirements for established practices or action that facilities can already take.

Requirements should reflect differences between industries, facilities and emissions sources. Where several approaches can achieve the required result, regulation should specify the emissions outcome and relevant safety and performance standards rather than prescribe one technology.

Australian and international experience shows how requirements can be strengthened over time (**Box 8**). The NSW Environment Protection Authority is progressively introducing reporting, planning, measurement and sector-specific mitigation requirements, with commencement reflecting emissions risk and the availability of evidence and technology (NSW EPA, 2026a). British Columbia has also strengthened oil and gas methane requirements in stages, including risk-based leak monitoring and continuous monitoring for the highest-risk sources (Government of British Columbia, 2024). The province is on track to achieve its target of reducing methane emissions from the sector by 45% from 2014 levels by 2025 (Government of British Columbia, 2024).

Governments should use existing Commonwealth, state and territory regulatory systems where they can deliver the required outcomes. Using existing regulatory systems could reduce duplication, provided requirements, reporting and regulatory responsibilities are appropriately aligned.

4.5 Conclusion

Fossil methane reductions can make an important contribution to limiting near-term warming. Australia has material fossil methane emissions from coal mining and gas activities, but the available abatement measures differ in maturity, applicability and cost. The policy response therefore needs to combine action on established practices with coordinated work to prepare other measures for wider use.

The Safeguard Mechanism provides covered facilities with a broad financial incentive to reduce emissions while retaining flexibility over how they comply. It does not guarantee that particular methane measures will be adopted. Targeted action can complement the Safeguard Mechanism by setting common minimum requirements where practices are established, addressing demonstrated barriers to viable projects and preparing other technologies for later regulation.

Delivery will require cooperation between the Australian Government, state and territory governments, regulators, industry and research organisations. Existing reporting and regulatory systems should be used where they can deliver the required outcomes. Clear responsibilities, implementation timeframes and public reporting through the action plan would allow governments and the Authority to assess progress and determine where further action is warranted.



Chapter 5

Sector snapshots

Overview

Australia's progress towards a prosperous, resilient net zero future is uneven across the economy, with 2 of the 7 sector snapshots showing emissions progress that meets or exceeds the indicative pathways aligned with Australia's targets. The transition is advancing fastest where technologies are relatively mature, costs are falling and policies support their deployment. Falling battery prices are improving the economics of electric vehicles and energy storage, while recent fuel market disruption has highlighted the economic and energy security benefits of reducing reliance on imported liquid fuels. Other sectors face longer investment cycles, infrastructure constraints or technologies that are not yet ready to deploy at scale.

The following snapshots examine progress across 7 sectors that mirror the 6 Sector Plans underpinning the Australian Government's Net Zero Plan (DCCEEW, 2025d). Agriculture and Land are presented in separate snapshots to enable more comprehensive assessment of their emissions profiles.

Each of the 7 sector snapshots covers 4 areas:

1. Emissions reductions progress – how sectoral emissions have changed, and how that progress compares with an indicative pathway to 2035.
2. Progress against the Australian Government's Net Zero Plan and relevant Sector Plan – progress towards goals and objectives for 2030, 2035 and 2050.
3. A policy spotlight – a significant policy issue affecting the sector.
4. Abatement opportunities – further opportunities to complement the Sector Plan.

To assess emissions reduction progress, each sector's emissions were compared against an indicative reference pathway informed by the Authority's Sector Pathways Review and 2035 targets advice. These pathways illustrate plausible trajectories towards Australia's 2035 emissions reduction targets and provide a benchmark for assessing whether emissions are falling at broadly the pace required.

The reference pathways are indicative, rather than precise measures of where each sector should be in any given year:

- They are not forecasts or sector-specific targets, nor do they represent the only way Australia can achieve its national targets. Most pathways assume a steady decline in emissions as a simple benchmark. In practice, progress will vary over time as technologies are deployed, investments are made, policies take effect and climatic conditions change.
- They focus on direct emissions within each sector and do not fully account for the interactions between sectors or the flexibility available under existing policies. For example – facilities covered by the Safeguard Mechanism can meet their obligations by surrendering Australian Carbon Credit Units (ACCUs); this means facilities in the industry, resources and transport sectors are supporting emissions reductions in the land, agriculture and industry (waste) sectors.

The reference pathways will be refined as new data and evidence become available.

The sector snapshots highlight opportunities to reduce emissions across every part of the economy. Realising these opportunities will require timely and effective implementation of the Australian Government's Sector Plans and Net Zero Plan.

Figure 20 summarises the main policy opportunities identified across the 7 sectors. These include accelerating renewable electricity deployment and electrification, reducing industrial and fossil methane emissions, supporting the uptake of commercially available agricultural technologies, and increasing land-based carbon sequestration. Stable and predictable policy settings will also be critical to providing the confidence needed for long-term investment in emissions reduction.

Together, the snapshots reveal where momentum is building, where progress is at risk, and where further action can make the greatest difference.

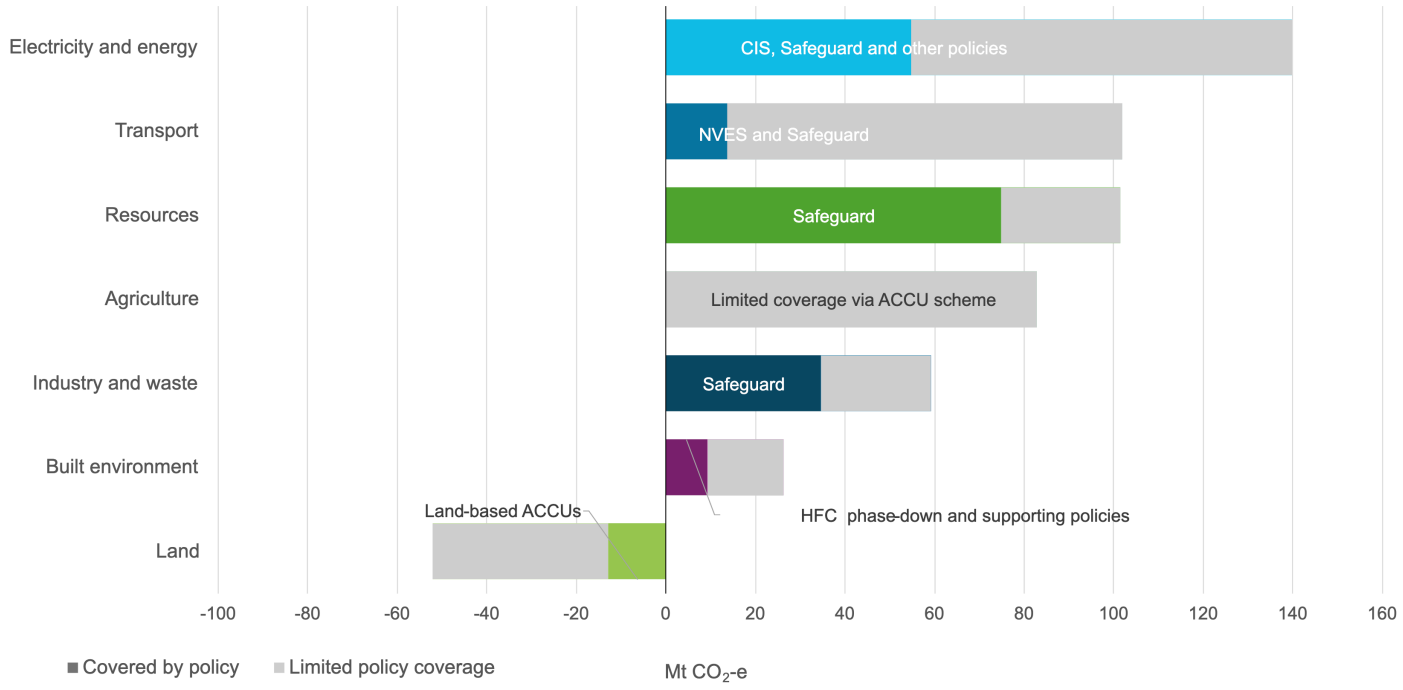
Figure 20: Summary of actions governments can take to accelerate emissions reduction

RESOURCES	Adjust Safeguard Mechanism settings to drive deeper emissions reductions from large industrial facilities. Coordinate national action to accelerate methane abatement across the resources sector. Partner with key trading partners to position Australia as a competitive supplier of low-emissions commodities.
INDUSTRY AND WASTE	Adjust Safeguard Mechanism settings while managing competitiveness and carbon leakage risks for emissions-intensive industries. Support deployment of emissions reduction technologies across industry and waste sectors, including industrial electrification. Target policy and investment support to accelerate uptake of proven lower-emissions technologies.
TRANSPORT	Accelerate electrification of road transport through vehicle supply, charging infrastructure and consumer incentives. Scale up low-carbon fuels for transport modes that are harder to electrify. Establish ambitious post-2029 light vehicle emissions standards to sustain progress as technology costs continue to fall.
BUILT ENVIRONMENT	Expand incentives for household and business electrification and energy efficiency upgrades. Improve the resilience of homes and buildings to climate impacts through weatherproofing and adaptation measures. Support rental households to access energy-saving upgrades and lower energy bills.
ELECTRICITY AND ENERGY	Establish an enduring framework that provides greater revenue certainty to accelerate investment in renewable generation, storage and transmission infrastructure. Streamline planning, regulatory and approval processes to bring new projects online sooner. Maintain momentum in the electricity transition while ensuring reliability, affordability and system security.
AGRICULTURE	Accelerate uptake of low-emissions technologies and practices across agriculture. Support deployment of emerging solutions, including low-emissions fertilisers, renewable energy and electrification. Invest in innovation, research and development to expand future abatement opportunities.
LAND	Improve the integrity, permanence and durability of land sector carbon sequestration. Reform carbon market settings to better manage reversal and permanence risks. Support reforestation, revegetation and other land-based abatement opportunities while monitoring land-use impacts and trade-offs.

5.1 Sectoral emissions and policy coverage

Existing policies reach most sectors of the economy, but their coverage and stringency vary considerably (**Figure 21**). In this context, 'policy coverage' is illustrative of the degree to which policies limit or reduce emissions.

Figure 21: Sectoral emissions and policy coverage in 2025



5.2 Resources sector

Achieving economy-wide 2035 targets will require greater abatement of fossil methane, increased electrification, and actively working with key trading partners to position Australia as a leading global supplier of low-emissions commodities.

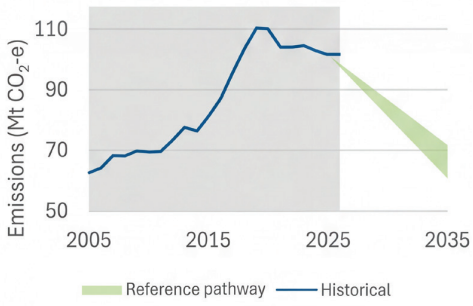
EMISSIONS REDUCTION PROGRESS

Emissions have declined by 9% since their peak. Reductions must accelerate to contribute meaningfully to the economy-wide 2035 targets

Following exponential emissions growth from the mining boom, and particularly the expansion of LNG production, reductions since 2020 have been modest (Figure 22).

These reductions can be attributed in part to changes in production (including reduced output from underground coal mines) and adoption of some abatement technologies, such as reservoir CCS and off-grid renewables.

Figure 22: Resources emissions, 2005–2035



Source: CCA analysis of DCCEEW, 2026.
Note: The linear pathway for the reference trajectory (green shading) is indicative only, and not prescriptive of how the sector's emissions will actually occur to 2035.

PROGRESS AGAINST THE SECTOR PLAN

Progress is at risk due to non-price barriers to abatement, which are not resolved by the Safeguard Mechanism

The goal of reducing routine venting and flaring from oil and gas facilities by 2030 is at risk. Emissions from venting and flaring have not demonstrated a sustained downward trend, while production volumes have remained relatively stable (DCCEEW, 2026r).

The goal of scaling-up VAM abatement technology in coal mines by 2035 is at risk. Consultation indicates that, despite progress on demonstration projects, barriers to broader deployment remain (see section 4.2).

The goal to increase electrification and energy performance by 2035 is at risk. On-site electrification has grown modestly in the last decade, though progress has slowed in recent years (Figure 24).

The goal to commercialise electrified haulage by 2030 is behind track. On-site liquid fuel use from heavy vehicles has grown steadily in the last decade (Figure 24).

The goal of expanding CCS by 2030 is at risk. Despite some government support (Australian Government, 2023a; Government of Western Australia, 2025), high commercial barriers and approval delays persist. Australia has 18 CCS projects at various development stages, with only 2 projects operational (Geoscience Australia, 2026a).

Legend

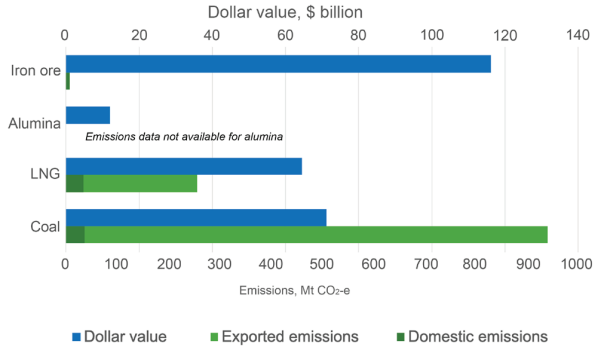
Not started / too early to tell	At risk
On / ahead of track	Behind track

SPOTLIGHT ISSUE

Transitioning existing resource exports towards green exports positions Australia for future prosperity

Positioning Australia as a leading global supplier of low-emissions commodities through an equitable transition is a key objective of the Resources Sector Plan. Actively collaborating with Australia's key trading partners to decarbonise our major exports (Figure 23) and grow green industry value chains can address demand-side barriers. This would complement recently announced supply-side policies under the Government's Future Made in Australia package. Given iron ore is a key Australian export, green iron represents a significant value-adding opportunity that can contribute to global decarbonisation.

Figure 23: Emissions and dollar values, key exports



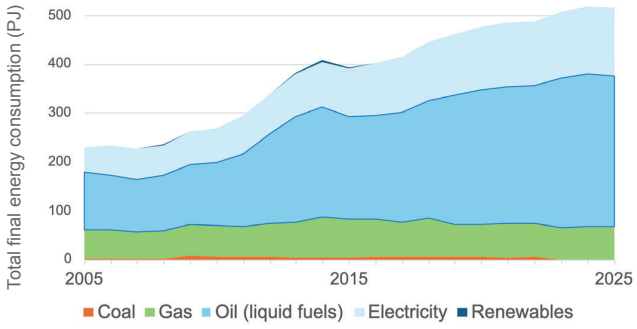
Sources: CCA analysis of CER (2026a), DCCEEW (2026p, 2026q), DISR (2026).

ADDITIONAL ABATEMENT OPPORTUNITIES

Greater electrification, on-site renewables and CCS can accelerate resources sector decarbonisation

Accelerating vehicle electrification and on- site electricity generation can significantly reduce emissions. Liquid fuels (diesel) are a dominant and, in the absence of further action, increasing source of final energy consumption (Figure 24).

Figure 24: On-site energy use (mining)



Source: DCCEEW, 2026c.
Note: Oil also underpins a portion of electricity supply for the sector.

Further developing and commercialising CCS. This could include a combination of enabling regulation, streamlining policies across jurisdictions and shared infrastructure development.

5.3 Industry and waste sector

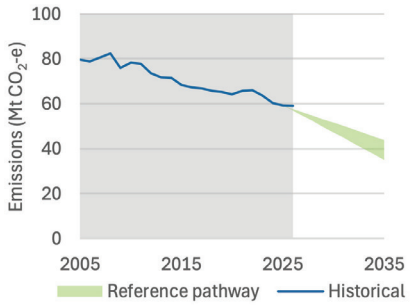
Accelerating technology deployment and renewable electricity can drive the emissions reductions industry needs while boosting competitiveness and export opportunities.

EMISSIONS REDUCTION PROGRESS

Emissions have declined modestly, with early signs the Safeguard Mechanism and complementary policies are incentivising decarbonisation

The average pace of reductions must double to align with the reference pathway consistent with Australia's 2035 target. Figure 25 shows industrial emissions have declined since their 2008 peak. The modest reduction in 2024–25 partly reflects changes and disruptions to production, including the prolonged blast furnace outage at Whyalla Steelworks (KordaMentha, 2026).
Long lead times for major industrial investments and retrofits mean the Safeguard Mechanism's impact will take time to emerge. Clear, enduring post-2030 settings, alongside complementary policies such as Future Made in Australia, will be critical to accelerating industrial decarbonisation.

Figure 25: Industry and waste emissions, 2005–2035



Source: CCA analysis of DCCEEW (2026q).
Note: The linear reference pathway (green shading) is indicative only, and not prescriptive of how the sector's emissions will actually occur to 2035.

PROGRESS AGAINST THE SECTOR PLAN

2030 goals are at risk despite some progress deploying proven technologies

The goal of widespread uptake of commercially available abatement technologies taken up by 2030 is at risk. Electrification and renewable fuel use in manufacturing have increased only gradually, reaching 42% of final energy use in 2024–25, up from 38% in 2018–19 (DCCEEW, 2026c). Major barriers, including access to renewable electricity, network constraints, high upfront costs, and the complexity of retrofitting existing facilities, continue to slow the rollout of large-scale projects. Emerging technologies such as green iron production have been demonstrated at pilot stage (Fortescue, 2026e), but are yet to reach commercial deployment.

The goal to decarbonise industrial electricity supply by 2030 is at risk. The supply of renewable energy and long-duration storage will need to grow faster to support industrial electrification (see Electricity and Energy snapshot). Industry demand for renewable electricity is emerging, with facilities securing power purchase agreements (Rio Tinto, 2025).

The goal of establishing the foundations for a hydrogen market by 2030 is behind track. While the Guarantee of Origin scheme is now operational, only one large-scale clean hydrogen project has reached FID, becoming the first Hydrogen Headstart recipient to do so (CSIRO, 2026b). The project pipeline has contracted as rising costs and a narrowing set of viable end uses have reduced demand expectations (DCCEEW, 2026m, 2026n; Geoscience Australia, 2026b). To date, policy support has focused largely on renewable hydrogen projects, while the role of other clean hydrogen pathways remains less certain.

Legend

Not started / too early to tell	At risk
On / ahead of track	Behind track

SPOTLIGHT ISSUE

With the right enablers, Australia could become a competitive supplier of low-emissions products and green exports

Transitioning to value-added green exports, such as green iron, steel and alumina, can position Australia for future prosperity while helping decarbonise global value chains (see Resources spotlight). Capturing this opportunity requires a portfolio of measures to complement the Safeguard Mechanism and Future Made in Australia agenda (CCA, 2024b), including:

- substantial capital investment to modernise industrial assets through replacements or retrofits
- collaboration across the value chain to address barriers to investment, such as project bankability, and strengthen market confidence
- reliable access to low-emissions electricity and fuels
- access to common user infrastructure, which could include renewable electricity generation and transmission, clean hydrogen production and CCS.

ADDITIONAL ABATEMENT OPPORTUNITIES

Further assistance is required to increase electrification of low-temperature process heat and reduce organic waste emissions

Better targeted funding and process integration assistance for smaller industrial facilities to adopt commercially available technologies for low-temperature process heat. Upgrades could be rolled out by 2035 in facilities with process heat requirements below 250°C (CCA, 2024b).

Unlock near term waste and resource recovery and circular economy opportunities identified in the Industry Sector Plan. The Australian Government can leverage implementation of the Circular Economy Roadmap to drive jurisdictional alignment on waste and resource recovery priorities. Governments can also create supportive market conditions, such as through ensuring clean supply of organic materials via food and organic waste collection and uptake of products, such as compost.

5.4 Electricity and energy sector

Despite growth in battery storage and household solar, an enduring solution is urgently needed to help renewable generation, firming, and long-duration storage projects reach FID sooner, so grid supply keeps pace with renewable targets and growing electricity demand.

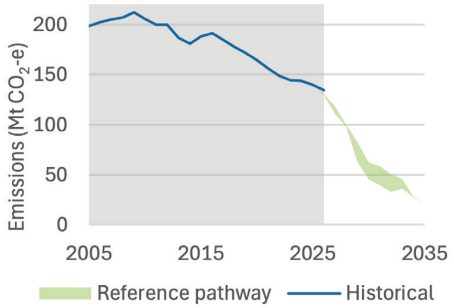
EMISSIONS REDUCTION PROGRESS

Emissions have fallen faster than other sectors, but the pace must triple to meet economy-wide targets and enable decarbonisation in other sectors

Emissions reduction rates averaged 5 Mt CO_2-e per year between 2020 and 2025. This needs to more than triple to ~16–19 Mt CO_2-e per year on average to 2030 to align with the reference pathway.

An unprecedented and transformative acceleration in clean electricity supply is needed for the sector to achieve 82% renewables by 2030. The slowdown in deployment of utility-scale renewables (from 5.9 GW in 2024–25 to around 2.9 GW in 2025–26 (analysis of CER, 2026h)) must be urgently reversed.

Figure 26: Electricity & energy emissions, 2005–2035



Source: CCA analysis of (DCCEEW, 2026q).
Note: The reference pathway (green shading) is indicative only, and not prescriptive of how the sector's emissions will actually occur to 2035.

PROGRESS AGAINST THE SECTOR PLAN

While household solar and battery uptake has surged, large-scale solutions require further policy reform or faster development

The goal to increase on-grid renewable share to 82% by 2030 is behind track (see spotlight issue below). Capacity expected to be delivered through the CIS falls well short of its targets (CCA analysis of RenewMap, 2026). The proposed ESEM could provide greater long-term certainty for investment, but its design remains unsettled and it does not yet have support of all NEM jurisdictions.

The goal to expand household solar and batteries by 2030 is on track. The Cheaper Home Batteries Program delivered a cumulative 13 GWh, and rooftop solar installations reached ~30 GW capacity by June 2026 (CER, 2026n). Energy ministers are considering measures to enable the use of plug-in solar and batteries (DCCEEW, 2026j).

Large-scale battery storage has grown considerably, with 4.6 GW (12.4 GWh) commissioned in 2026 (AEMO, 2026e). In Q2 2026 large and small-scale batteries reshaped electricity demand and reduced electricity spot prices (AEMO, 2026e).

The goal for efficient transmission construction and use is at risk due to frequent delays. The 2026 system plan reduces how much transmission is required by 2050, yet around 6,000 km of transmission must be deployed faster than recent rates (AEMO, 2026a).

It is too early to tell if the sector plan's goal to establish renewable gas markets by 2030 and start displacing natural (fossil) gas by 2035 is on track. Renewable gas remains under-exploited (ENEA Consulting, 2019). Enabling regulations such as the Guarantee of Origin scheme could cover biomethane in the future (DCCEEW, 2026m).

Legend

Not started / too early to tell	At risk
On / ahead of track	Behind track

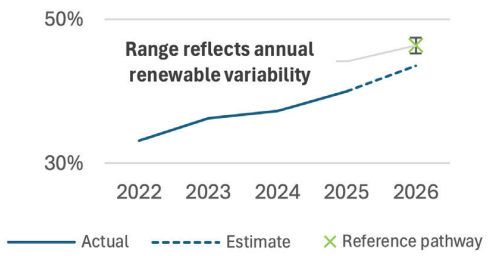
SPOTLIGHT ISSUE

Urgent acceleration is needed to reach 82% renewables in 2030 while addressing issues with revenue certainty, supply chains, and growing electricity demand

In 2025–26 the share of on-grid renewables grew around 4 percentage points to reach 44%, less than the reference pathway of 45–48% for the same period (Figure 27). Large-scale renewable energy projects continue to face challenges, including revenue uncertainty, transmission and approval delays*, community resistance, as well as workforce and supply chain constraints. Renewable energy will also need to meet growing demand from data centres, household and transport electrification, and green commodity production (AEMO, 2026c).

*Reforms to the EPBC Act, approvals and grid connection processes may help to reduce project delays.

Figure 27: Share of on-grid electricity provided from renewables, 2022–2026



Source: CCA analysis of DCCEEW (2026b) and Open Electricity (2026b)

ADDITIONAL ABATEMENT OPPORTUNITIES

Support timely coal exits and increase the usage of available renewable energy

Faster rollout of large-scale renewables, long-duration storage and firming can support faster and firmer commitments on coal power exits. Further solutions are needed to provide the revenue certainty for greater investment and deployment of large-scale renewable resources, required to replace coal-fired generation.

Greater electrification across households, vehicles and industry can reduce emissions, improve energy efficiency and reduce Australia's dependence on imported liquid fuels (DCCEEW, 2026i; Ausgrid, 2026). Further deployment of distributed energy resources can also support this. Enabling bi-directional charging of EVs could also support the electricity system (EVC, 2026).

Identifying opportunities to boost renewable gas production (biogas and biomethane) as only Jemena's Malabar biomethane facility is operational. (Jemena, n.d.).

5.5 Built environment sector

Addressing split incentives can accelerate electrification of rental properties and deliver energy savings and resilience benefits for households and businesses. Reducing embodied carbon will require sustained action on building standards and disclosure.

EMISSIONS REDUCTION PROGRESS

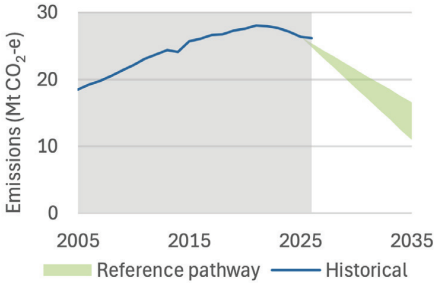
Emissions in the built environment sector peaked in 2021, yet reductions must accelerate to contribute meaningfully to economy-wide 2035 targets

Built environment emissions have remained at similar levels since peaking in 2021. It is too early to determine whether emissions are on a sustained downward trend.

In 2026, emissions in the built environment fell by around 0.2 Mt CO_2-e (1%; DCCEEW, 2026q). Under Australia's 2035 target-aligned pathway, emissions need to fall by 1–2 Mt CO_2-e (i.e. 4–6%; Figure 28). The sector will need more substantial action to meet Australia's 2035 targets (Figure 28).

Policies such as the Cheaper Home Batteries Program, the Household and Community Energy Upgrades Funds, Minimum Energy Performance Standards and NABERS have likely contributed to progress in the sector.

Figure 28: Built environment emissions, 2005–2035



Source: CCA analysis of DCCEEW (2026q).
Note: The linear pathway (green shading) is indicative only, and not prescriptive of how the sector's emissions will actually occur to 2035.

PROGRESS AGAINST THE SECTOR PLAN

Electrification and HFC phase down are progressing and foundations to reduce embodied carbon are set, but more is needed for rental properties.

The goal to progress electrification and energy performance for residential and commercial buildings by 2035, and electrify most of Australia's building stock by 2050, is at risk. There has been significant uptake of household electrification and improved energy performance nationally, such as the Cheaper Home Batteries Program and rooftop solar installations in recent years*. Split incentives remain a major issue for rental properties (APA 2026 submissions from Parents for Climate; Climate Council; Smart Energy Council). There is also no national plan to manage the transition to electric buildings (CCA, 2024b).

*(ABCB, 2026a; DCCEEW, 2026h; Home Energy Rating, 2025; NSW Government, 2026; Victorian Government, 2026)

The goal to establish frameworks to reduce embodied carbon by 2030 and introduce embodied carbon requirements for most buildings by 2035 is at risk. National measurement and rating frameworks have been established and voluntary reporting is now in place (ABCB, 2026b; NABERS, 2025). The sector plan aimed to establish mandatory disclosure and performance requirements by 2035 (DCCEEW, 2025d). Pausing updates to the National Construction Code (NCC) (Treasury, 2025b) has compromised this timeline.

The goal to completely phase down high-GWP refrigerants (HFCs) by 2050 remains on track with the timing set in the Kyoto Protocol and the Kigali Amendment (DCCEEW, 2026o).

Legend

Not started / too early to tell	At risk
On / ahead of track	Behind track

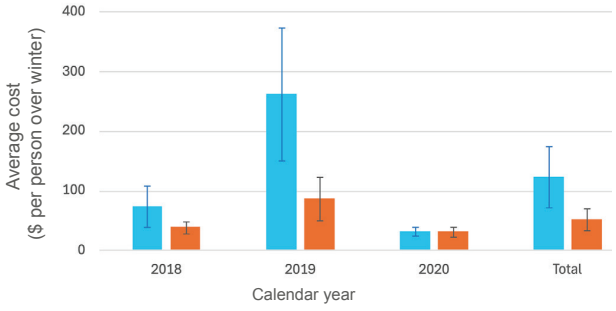
SPOTLIGHT ISSUE

Electrification and climate-proofing can reduce household costs and deliver health and wellbeing benefits

Electrification is the largest near-term opportunity to reduce operational emissions, save costs, and deliver health and resilience benefits to households (CCA, 2024b).

The Victorian Government's Healthy Homes Program found low-cost climate-proofing and thermal efficiency upgrades (averaging $2,800) helped reduce both energy bills ($85 per winter per household) and out-of-pocket healthcare costs (Figure 29) while improving resilience to extreme temperatures (Page et al., 2022).

Figure 29: Medicare Benefit Scheme out-of-pocket costs over winter to households that undertook home upgrades (orange) and those that did not (blue)



Source: Page et al., (2022).

ADDITIONAL ABATEMENT OPPORTUNITIES

Addressing split incentives for rental properties and more action on embodied carbon can further reduce emissions

Work with states and territories to drive national uptake of minimum energy efficiency standards and mandate the disclosure of home energy ratings. The upfront capital required to electrify rental properties discourages landlords from investing in upgrades that benefit tenants (Gordon, 2026). Ministers are exploring plug-in solar and batteries to expand accessibility (Stephens, 2026), and some jurisdictions have introduced minimum energy efficiency standards for rentals (ACT Government, 2023; Consumer Affairs Victoria, 2026). Yet there is no national framework for these standards (ECA, 2025b). Along with mandatory disclosure of home energy ratings, a national rental standards approach would both help address split incentives and accelerate energy efficiency upgrades.

Mandate public disclosure of embodied carbon for very large projects. The largest projects account for a disproportionate share of embodied carbon emissions. Mandating disclosure requirements in the NCC for these buildings (e.g. the largest 5%) would cover a significant share of embodied emissions (NABERS, 2026) without imposing obligations on the broader market. These requirements would improve data and transparency, driving innovation and low-carbon practices across the building supply chain (CCA, 2024b).

5.6 Transport sector

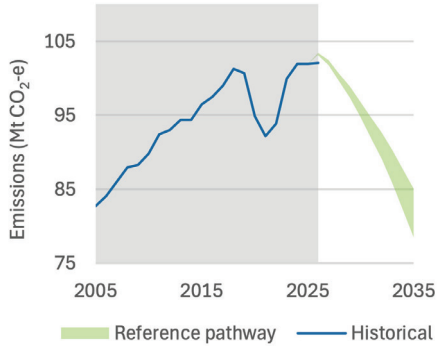
Transport emissions are at a turning point, with falling battery and EV prices expected to drive emissions down in the light vehicle segment. Decarbonisation of all transport modes through electrification and low-carbon fuels will be critical to sustain this decline.

EMISSIONS REDUCTION PROGRESS

Transport sector emissions may have peaked, and should begin to fall as electrification options become more affordable, and renewable fuels become more available

Figure 30 shows that post-COVID emissions peaked at 102 Mt CO_2-e across 2024–2026. Economic activity and population growth continue to put upward pressure on emissions.
In 2026, the sector did better than the Authority's 2035 target-aligned reference pathway. This was likely due to reduced fuel demand from higher fuel prices. Emissions reduction rates to 2030 need to reach ~1 Mt CO_2-e per year on average, accelerating to 2–3 Mt CO_2-e per year after that, to align to the reference pathway.

Figure 30: Transport emissions, 2005–2035



Source: CCA analysis of DCCEEW (2026q).
Note: The reference pathway (green shading) is indicative only, and not prescriptive of how the sector's emissions will actually occur to 2035.

PROGRESS AGAINST THE SECTOR PLAN

Electrification of light vehicles has accelerated due to high fuel prices, yet not for other modes of transport as policy and technologies mature

The goal for EVs to become increasingly affordable over 2025-2030 is on track. Light EV sales have surged in 2026 due to cheaper EVs and high fuel prices. There are early signs that the rollout of public EV charging is not keeping up with demand, leading to challenges for those with limited access to private charging (Purtill & Lim, 2026; see section 2.3). The New Vehicle Efficiency Standard (NVES) also boosted market supply of more efficient, zero emissions vehicles.

Progress towards the goal of electrifying buses and small trucks remains at an early stage. While multiple trials of electric trucks are underway (ARENA, 2025), uptake remains below the global average of 9% in 2025 (IEA, 2026b). Electric and hybrid vehicles account for only around 3% of light-duty truck sales in Australia, while battery electric heavy trucks account for <2% (Truck Industry Council, 2026).

Reducing overall liquid fuel demand is at risk, as total liquid fuel demand remains high (~62,000 ML/yr across 2024–2026) (DCCEEW, 2026d).

Electrification trials of heavy rail, short range maritime and aviation are on track and have commenced (Bates, 2026; Heart Aerospace, 2026; Incat, n.d.).

Foundations of the low carbon liquid fuels (LCLF) industry are developing, though it is uncertain whether it will reach the scale and pace needed by 2030. Current policy measures are progressing, and key policy settings are under development, including a proposed LCLF demand mechanism. Stakeholders told the CCA further policy support may be needed to unlock investment and accelerate deployment (APA 2026 submissions from bp Australia; AMPOL; Aurizon; Viva Energy Australia).

Legend

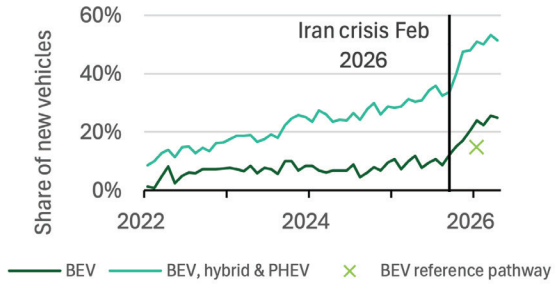
Not started / too early to tell	At risk
On / ahead of track	Behind track

SPOTLIGHT ISSUE

Electric vehicle uptake has surpassed forecasts, curbing emissions, reducing fuel bills and increasing energy sovereignty

In 2026, EV sales accelerated amid global energy market disruptions, helping reduce light vehicle emissions and cutting fuel bills for motorists (Figure 31). More EV models are now available, at cheaper prices. EVs were 2.3% of the existing light vehicle fleet in January 2026 (BITRE, 2026); this will increase with strong recent sales. A growing EV fleet will also reduce Australia's reliance on imported fossil fuels.

Figure 31: EV sales, 2022–2026



Source: Authority analysis of FCAI and EVC via EVDB (2026).
Note: The 'BEV reference pathway' was a previously estimated share of battery electric vehicles (BEVs) in sales for the 2026 calendar year, based on NVES limits.

ADDITIONAL ABATEMENT OPPORTUNITIES

Accelerate decarbonisation of all modes of transport via electrification and low carbon liquid fuels (LCLF)

Coordinate and develop new heavy vehicle (incl. heavy and light duty trucks, and buses) decarbonisation and electrification options, including for charging infrastructure (The Superpower Institute, 2026). The decarbonisation of existing vehicle fleets should also be accelerated, such as supporting options to replace aging heavy and light vehicle fleets with low and zero emissions alternatives.

Scale LCLF (renewable diesel and sustainable aviation fuel) industry development and proposed LCLF demand mechanism, to align with Australia's emissions reduction and international aviation (ICAO, n.d.) targets.

Ensure post-2029 NVES limits make an ambitious and achievable contribution to Australia's emissions reduction targets to support greater reductions in new light vehicle emissions (see section 2.3).

5.7 Agriculture sector

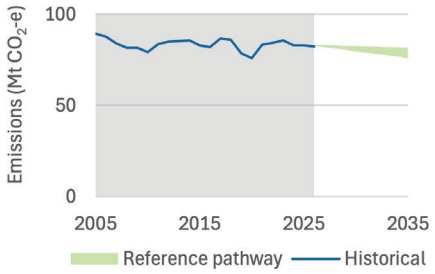
Maintaining a productive and competitive agriculture sector while reducing emissions will require accelerating uptake of available technologies and investing in the development of future solutions.

EMISSIONS REDUCTION PROGRESS

Agriculture emissions are declining modestly; action now will enable deeper reductions beyond 2030

Since 2005, emissions have largely fluctuated in line with Australia's cattle herd size (see spotlight issue below). Although declines over the past 5 years broadly align with the contribution needed from this sector (Figure 32) to meet Australia's economy-wide 2035 target, this has largely been driven by seasonal conditions rather than emissions reduction activities within the sector (DCCEEW, 2026r).

Figure 32: Agriculture emissions, 2005–2035



Source: CCA analysis of DCCEEW (2026q).
Note: The reference pathway (green shading) is indicative only, and not prescriptive of how the sector's emissions will actually occur to 2035.

PROGRESS AGAINST THE SECTOR PLAN

Work is underway to scale uptake of proven technologies and accelerate development of new ones

The goal of making investments in systems to support on-ground action by 2030 is on track. Ongoing support for farmers is helping build the systems, knowledge and capacity needed by 2030 to reduce emissions intensity by 2035. The expanded Carbon Farming Outreach Program (CFOP) is developing new knowledge resources and more training (DAFF, n.d.-a). The Government has developed new guidelines for tools to support farm-level emissions estimation and reporting (DCCEEW, 2026y). Climate-Smart Agriculture projects are providing targeted support on precision agriculture and other practices (DAFF, n.d.-b).

The goal of making investments in technology solutions by 2030 to reduce emissions longer-term is on track. Research and development are advancing enteric methane reduction technologies and delivery approaches, including scaling up asparagopsis production and methane breeding values (DCCEEW, 2026s; MLA, 2026). Efforts are also underway to support the uptake of enhanced-efficiency fertilisers by governments and research and development corporations (DAFF, 2025a; ZNEAg CRC, n.d.).

Legend

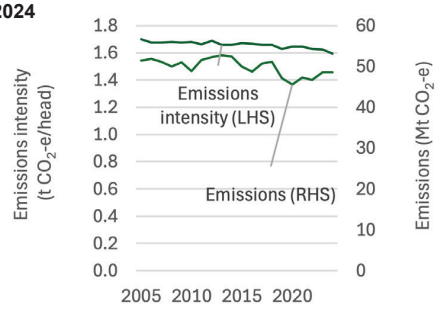
Not started / too early to tell	At risk
On / ahead of track	Behind track

SPOTLIGHT ISSUE

Technology can help reduce cattle emissions intensity now, with additional solutions on the horizon

Improved herd and pasture management, supported by existing technologies such as virtual fencing and satellite-based monitoring, can deliver meaningful reductions in the emissions intensity of cattle farming.
Deeper cuts to emissions (Figure 33) will require faster uptake of existing technologies, such as feed supplements and low-methane genetics. This will require overcoming barriers, including feed supplement costs.
Meat and Livestock Australia is currently developing an ACCU method for use of feed supplements. This may help address cost barriers by creating an additional revenue stream from verified methane reductions.

Figure 33: Cattle emissions and emissions intensity, 2005–2024



Source: CCA analysis of ABS (2026) and DCCEEW (2026e).

ADDITIONAL ABATEMENT OPPORTUNITIES

Additional measures can unlock abatement from on-farm energy use and agricultural soils

Incentivise uptake of alternatives to on-farm fossil fuel use. Despite fuel use accounting for 9% of agricultural emissions in 2023–24, the Sector Plan includes limited measures to accelerate uptake of ready-to-scale alternatives, including small-scale renewables, electrification and improved energy performance (DCCEEW, 2026e). The expansion of the small-scale renewable energy scheme to provide eligibility to solar PV systems up to 1 MW will support agricultural facilities to increase renewable electricity generation. Increased production, lower costs and improved availability of low-emissions fuels (for example, bio-diesel) is needed. Similar technologies are being deployed in Europe with targeted government support (BMLEH, 2026; Fedecom, 2026; Government of Ireland, 2026).

Support uptake and innovation in low-emissions fertilisers. Uptake of ready-to-deploy alternatives will require bridging cost gaps with conventional fertilisers. Investment to develop emerging options, such as novel waste-derived biofertilisers and biochar-based soil amendments, may create pathways to improve soil carbon, nutrient-use efficiency and reduce reliance on synthetic fertiliser imports. Fertiliser use contributes 6% of agriculture emissions, with current Sector Plan actions on fertilisers focusing primarily on enhanced efficiency fertilisers, crop rotation and precision agriculture (CCA, 2024b; DAFF, 2025b).

5.8 Land sector

While the land sector remains a critical productive asset and carbon sink, sequestration rates are inherently variable and will be increasingly affected by climate impacts. Greater support for landholders and native plantation forestry will be needed in the long term.

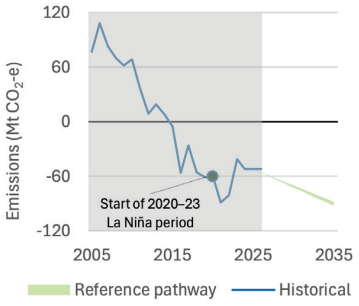
EMISSIONS REDUCTION PROGRESS

The land sector is an important carbon sink, but contributions are highly variable

Significant emissions reductions since 2005 have been driven by reduced land clearing and changes in land management practices (Figure 34). The extended La Niña period in 2020–2023 elevated carbon sequestration, but rates have since slowed. Climate variability increases uncertainty about the land sector's contribution to Australia's targets (see Spotlight).

As demands on land increase, sequestration will need to be considered alongside agricultural, environmental and community outcomes (see section 2.5 on land-use). Opportunities that complement or enhance productive land use could be important to delivering durable and cost- effective sequestration.

Figure 34: Land emissions, 2005–2035



Source: CCA analysis of DCCEEW (2026q).
Note: The reference pathway (green shading) is indicative only, and not prescriptive of how the sector's emissions will actually occur to 2035.

PROGRESS AGAINST THE SECTOR PLAN

Further action is needed to unlock Australia's land-based abatement potential

The goal of wider uptake of reforestation practices by 2035 is behind track. While the net forest sink is growing, reforestation remains well below the illustrative levels for delivering the Sector Plan. Net forest regrowth more than tripled in 2021–22, as forest conversion continued to fall while identified regrowth increased, largely driven by wetter conditions (DCCEEW, 2026r). The area of newly registered ACCU reforestation (environmental or mallee plantings) projects increased to 144 kha in 2025–26, yet this is less than half the scale of reforestation and regeneration area projected under ABARES' illustrative central scenario (CCA analysis of CER, 2026d; Coelli et al., 2026; Whittle et al., 2025). The shortfall is likely greater as the area used to estimate sequestration of a project, which is where the planting occurs, is typically smaller than the ACCU project area. Recent EPBC Act reforms have narrowed land-clearing exemptions and strengthened federal oversight of certain native vegetation clearing activities, which may support forest retention.

The goal of investments in systems to support on-ground action by 2030 is at risk. Land-based abatement under the ACCU Scheme is growing, but not yet at the scale needed. Issuances from vegetation and savanna fire management projects reached 14 million in 2025–26, up from around 10 million per year since 2017 (CCA analysis of CER, 2026j). ACCU demand by Safeguard facilities will continue to drive land-based abatement (CCA, 2026a). However, additional policies are likely to be needed to independently drive land-sector sequestration, and the full range of policy options should be carefully considered.

Legend

Not started / too early to tell	At risk
On / ahead of track	Behind track

SPOTLIGHT ISSUE

Climate change can reduce land-based carbon sequestration

Climate change creates risks around the durability and variability of the land sector's sequestration potential. Chronic impacts such as increases in temperature and shifting rainfall patterns may drive shifts in vegetation structure, composition and extent, which could reduce carbon sequestration potential over time. Acute impacts, such as increases in the frequency and severity of drought, bushfire, extreme heat, and flooding can reduce vegetation growth and limit or reverse soil carbon accumulation. Action from governments and landholders can address these risks, including through investment in research to better understand climate change impacts on sequestration and reduce uncertainty.

A strong El Niño is currently established and intensifying, with forecasts indicating it may persist until autumn 2027 (BOM, 2026b). While a strong El Niño does not inevitably result in below-average rainfall and above-average temperatures, these outcomes have been common in Australia (BOM, 2021). Such conditions increase the likelihood of planting failures, hinder vegetation establishment, and elevate the risk of carbon losses through tree mortality and bushfires. This may result in a decline in the land sink over the near term.

ADDITIONAL ABATEMENT OPPORTUNITIES

Further support for landholders and the sustainable forestry industry can help unlock additional land-based carbon sequestration

Strengthen support for landholders' participation in carbon markets. CFOP can be expanded to support more informed intermediaries, better tools and more practical, locally relevant advice (CCA, 2026a). Participation in the ACCU scheme and other programs can be strengthened by improving producer understanding of the productivity benefits of nature repair, degraded farmland restoration, and carbon projects. Increasing the number of methods available to landholders will enable participation in the scheme, provided they target the right activities (CCA, 2026a). Including First Nations peoples' knowledge, leadership and perspectives in method development can unlock employment, cultural and biodiversity benefits alongside financial returns and abatement.

Expanding sustainable plantation forestry. Supporting sustainable timber demand can increase carbon storage in planted forests and wood products (Ximenes, 2023), reducing pressure on native forests. Forestry and agricultural waste materials can also be used as inputs to low-carbon liquid fuel production (DAFF, 2026).

Appendix A: Safeguard

The tables below summarise the Authority's analysis of emissions from new and expanded Safeguard facilities that commenced or are expected to commence operations between 2024 and 2030.

Table A1: New or expanded facilities that are likely to contribute to Safeguard emissions between 2024 and 2030

Notes: A new facility is a facility that has not been covered by the Safeguard Mechanism for any previous year.

An expanded facility is a facility that has been covered by the Safeguard Mechanism previously and is carrying out an existing activity to a greater extent or beginning a new activity for the first time.

An extension is where a facility increases its operational lifespan but the nameplate capacity and production variables remain unchanged. Projects that were considered extensions and therefore not included in the 2026 new or expanded list included: Brockman Syncline 1; Hope Downs 2; and GEMCO - Eastern lease South Life Expansion.

The Authority identified 54 facilities that meet the definition of new and expanded facilities but excluded one from the list to avoid disclosing unpublished facility-level data. The cumulative net emissions 2024 to 2030 include the emissions from the excluded facility.

Projects added to the list of new and expanded facilities in 2026 are bolded.

* Project has been covered by the Safeguard Mechanism in any year since the reformed scheme commenced.

Coal net emissions 2024 to 2030: 11 Mt CO_2-e			
New facilities		**Expansions**	
Facility name	**Baseline type**	**Facility name**	**Baseline type**
Blair Athol Operations*	Default	Caval Ridge Mine Horse Pit Extension	Hybrid
Burton*	Default	Gregory Crinum	Hybrid
Hillalong	Best Practice	Rolleston (Phase 2)	Hybrid
Maxwell Underground Mine	Default	Tahmoor South*	Hybrid
New Acland (Stage 3 extension)	Hybrid	Boggabri Coal Expansion Mod 8	Hybrid
Olive Downs South*	Best Practice	Mammoth Underground Coal Mine*	Hybrid
Vulcan South	Best Practice	Ironbark No. 1*	Hybrid
Wilton-Fairhill	Best Practice	**Mount Pleasant***	**Hybrid**

Oil and gas net emissions 2024 to 2030: 8 Mt CO_2-e			
New facilities		**Expansions**	
Facility name	**Baseline type**	**Facility name**	**Baseline type**
Arcadia*	Hybrid	Crux Project	Best Practice
Barossa Backfill to Darwin LNG	Best Practice	Pluto Expansion (Train 2)	Hybrid
Beetaloo (Tamboran/Santos)	Best Practice	Goog-a-binge (Surat Gas Project Phase 2)	Hybrid
Scarborough	Best Practice	Halyard-2 infill / Greater East Spar*	Hybrid
Surat Gas Project (Phase 1)*	Hybrid		
Waitsia (Stage 2)	Hybrid		
Macedon*	**Hybrid**		

Metal ore mining net emissions 2024 to 2030: 8 Mt CO_2-e			
New facilities		**Expansions**	
Facility name	**Baseline type**	**Facility name**	**Baseline type**
Ashburton Hub/ Onslow Iron Ore*	Best Practice	Western Range*	Hybrid
Greenbushes Lithium Operation*	Hybrid	Gudai Darri Capacity* Expansion	Hybrid
Iron Bridge*	Default	KCGM Fimiston South*	Hybrid
McPhee Creek	Best Practice	Pilgangoora (P1000)*	Hybrid
Nolans Project	Best Practice	Tanami Expansion 2	Hybrid
Saint Elmo Vanadium Project	Best Practice	**Havieron project***	Hybrid
Thunderbird (Stage 1)	Best Practice		
Eva Copper Project	Best Practice		
Mulga Rock	Best Practice		
BHP Western Ridge	**Best Practice**		
Karlawinda Gold Project*	**Best Practice**		
Lamb Creek	**Best Practice**		
Mt Bundy	**Best Practice**		

Other net emissions 2024 to 2030: 4 Mt CO_2-e	
New facilities	
Facility name	**Baseline type**
Kwinana Lithium Refinery (Tianqi/IGO)	Default
Kwinana Lithium Refinery (Wes/SQM)	Best Practice
Perdaman Urea Plant	Best Practice
Townsville Energy Chemical Hub - Stage 1	Best Practice
Beaudesert Plant - A J Bush & Sons (Mfrs) P/L*	**N/A**[40]
Onslow Haul Road*	**Best Practice**
WA transport facility (MGM Group)*	**Best Practice**

Table A2: Comparison of new and expanded Safeguard facilities identified in 2024 APR, 2025 APR and the 2026 APA

	2024 APR	2025 APR	2026 APA
Total facilities	46	58	54*
New	38	43	36
Expanded	8	15	18
Already covered by the Safeguard Mechanism	8	20	24

* Since the 2025 publication, some projects have been delayed or reduced forecast production levels, so fewer new facilities are now expected to commence operations between 2024 and 2030.

Table A3: Comparison of net emissions from new and expanded Safeguard facilities identified in 2025 APR and 2026 APA

Cumulative emissions 2024 to 2030 (Mt CO_2-e)	2025 APR	2026 APA
	32	**32**
Coal	10	11
Oil and gas	9	8
Metal ore mining	9	8
Other	4	4

Note: 2026 APA emissions include the emissions from the facility excluded from Table A1.
Numbers may not add up due to rounding.

40. The facility has no production variable applicable to its activities, and therefore no baseline has been set by the CER. DCCEEW is considering setting a relevant production variable.

Table A4: Classification of new projects and expansions referred to the Authority under section 15A of the *Climate Change Act 2022*

Project name	Proponent	EPBC reference	Project type
Gas Supply Security Project Surat Basin	Australian Pacific LNG	EPBC 2020/8856	Extension
Havieron Gold and Copper Project/ Telfer Operation	**Greatland**	**EPBC 2021/9085**	**Expansion**
Lamb Creek Iron Ore Project	**Mineral Resources**	**EPBC 2023/09754**	**New project**
Middlemount Coal Mine Southern Open Cut Extension	Middlemount Coal	EPBC 2021/8920	Extension
North Kiaka Project Quartzite Mine Expansion	Simcoa Operations	EPBC 2021/9089	Extension
North West Shelf Extension	Woodside Energy Ltd	EPBC 2018/8335	Extension
Boggabri Coal Mine Modification 10	Boggabri Coal Operations Pty Ltd	EPBC 2024/09887	Extension

Note: Projects that met the requirements to be included in the list of new and expanded facilities at Table A1 are bolded.

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