Climateworks CENTRE

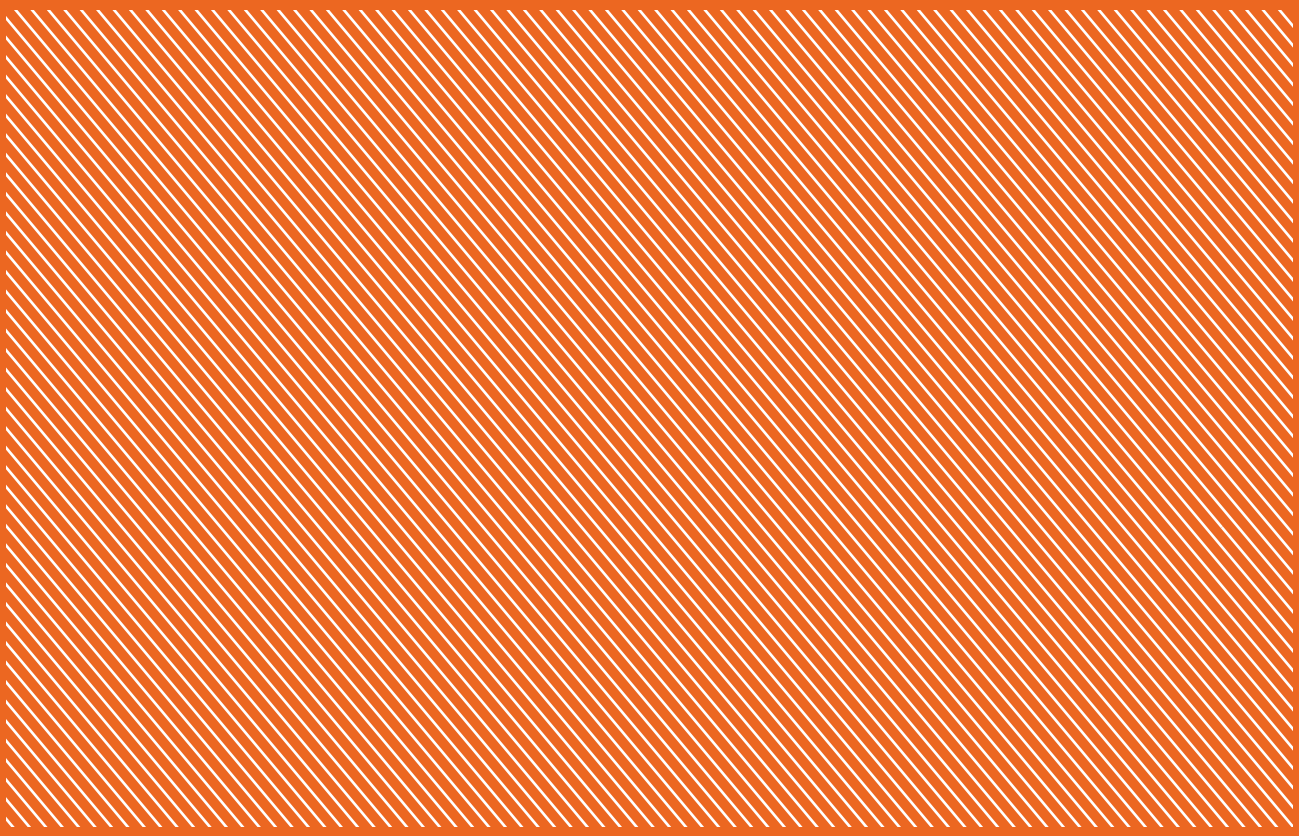
Leading climate policies from Australia's states and territories

SUMMARY REPORT

DECEMBER 2024

ACKNOWLEDGEMENT OF COUNTRY

We acknowledge and pay respect to the Traditional Custodians and Elders – past and present – of the lands and waters of the people of the Kulin nation on which the Climateworks Centre office is located, and all of the Elders of lands across which Climateworks operates nationally. We acknowledge that sovereignty was never ceded and that this was and always will be Aboriginal land. More information.



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We acknowledge and pay our respect to the Traditional Owners and Elders – past and present – of the lands and waters included in our state and territories work. We look forward to continuing to work on policies and actions that support First Nations people to benefit from the opportunities of a global green economy.

ABOUT US

Climateworks Centre bridges the gap between research and climate action, operating as an independent not-for-profit within Monash University. Climateworks develops specialist knowledge to accelerate emissions reduction, in line with the global 1.5°C temperature goal, across Australia, Southeast Asia and the Pacific.

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Executive summary

Since the Paris Agreement was signed in 2015, countries around the world have increasingly recognised climate change as a shared challenge and begun to implement emissions reduction plans. Subnational governments, both in Australia and globally, play a vital role in the global energy transition by implementing innovative local policies, establishing regulatory frameworks that promote renewable energy, attracting investment and setting emissions reduction targets in support of national and international goals.

In late 2024, every Australian state and territory government has set targets to achieve net zero emissions by 2050 or sooner, with most outlining bold interim goals to accelerate progress. Combined, these state and territory targets add up to an estimated 40–44 per cent reduction in Australia's emissions from 2005 levels by 2030, putting Australia's legislated 2030 national emissions target of 43 per cent within reach – provided state and territory governments deliver on their targets.

Looking ahead, state and territory climate targets add up to an estimated 66–71 per cent reduction in Australia's emissions from 2005 levels by 2035, revealing 71 per cent can act as a floor for Australia's upcoming 2035 target – its next nationally determined contribution under the Paris Agreement.

Last year, Climateworks Centre released its 2023 decarbonisation scenarios, which show how Australia can reduce its emissions, at least cost across the economy, in line with the Paris Agreement goals. In a scenario where Australia does its part to limit global warming to 1.5 degrees Celsius, emissions decline by 85 per cent by 2035 and reach net zero by 2039. In a well-below-2 degrees scenario, emissions decline by 61 per cent by 2035 and reach net zero by 2050 (Climateworks Centre 2023a). Climateworks' 2023 decarbonisation scenarios show that significant change would need to occur in each economic sector to realise either temperature goal.

In this report on state and territory climate actions and opportunities, we have analysed current state and territory climate policies and programs announced before September 2024. We highlight noteworthy initiatives and policies across six sectors of the Australian economy, with those sectors being broadly aligned with the Australian Government's sectoral pathways and plans developed throughout 2024. Our analysis shows that states and territories are making legislative changes and providing incentives and support to reduce emissions in each sector, as summarised here:

Electricity

Six states and territories have renewable energy targets of at least 50 per cent by 2030, and five have renewable energy targets of at least 80 per cent by 2035. Some jurisdictions have also set energy storage and energy efficiency targets. Since 2020, Tasmania has generated 98 per cent of its electricity from renewables, and the Australian Capital Territory has achieved 100 per cent renewable energy through contract agreements. In 2023, South Australia generated 70 per cent of its electricity from renewable sources.

Transport

Half of the states and territories have new car sales targets for electric vehicles, and charging infrastructure is being rolled out with government support and investment. Public and active travel are on the rise through expanded urban rail networks, the rollout of electric buses and walking and cycling infrastructure developments.

Buildings

State and territory governments are increasing support for energy efficiency building upgrades, including for social housing in all jurisdictions and better building standards. Residential rooftop solar installations continue to increase, with almost 4 million systems installed across Australia as of August 2024. The Australian Capital Territory and Victoria are implementing gas phase-out plans.

Industry[1]

State and territory governments are supporting industry decarbonisation through grant schemes and educational programs. New South Wales and Western Australia governments are planning to integrate renewable energy into designated industrial precincts; most state and territory governments are supporting the development of renewable hydrogen industries. State and territory-owned water utilities are setting ambitious net zero targets and diverting some waste from landfills.

Resources[2]

The Queensland and Western Australia governments are developing electricity grid upgrades to unlock the potential for more renewable electricity to supply their mining regions and, along with the New South Wales government, are funding pilots to reduce emissions from mining, including through new technologies. Some states and territories have implemented policies requiring large projects and emitters to assess and minimise their emissions.

Agriculture and land

Some state and territory governments are funding research to lower methane emissions from livestock and are implementing initiatives to promote low-emissions agriculture practices. Most states have programs or grants focused on land restoration.

[1]In Climateworks' analysis, the industry sector includes iron and steel production, chemicals (ammonia, explosives, fertilisers, rubber), manufacturing (alumina, cement, paper, textiles) and other industry (waste, water, construction services). This is equivalent to the national industry and waste sector. Industry and Resources sectors were amalgamated in Climateworks' 2021 report, *State and territory climate action: Leading policies and programs in Australia*. They have been disaggregated in this analysis to better reflect the Australian Government's sectoral emissions reduction plans.

[2]In Climateworks' analysis, the resources sector includes lithium, bauxite, coal, nickel, copper, iron ore, zinc and non-ferrous metal ore mining. It also includes oil mining and gas extraction and liquefaction.

The policies and programs highlighted in this report reveal that states and territories are strengthening their climate action, seeking to optimise advantage and ensure that residents benefit now and in the longer term. Their efforts are, in turn, supporting the global energy transition. State and territory climate targets collectively add up to a national equivalent target broadly aligned to limiting warming to well below 2°C. Still, significant challenges remain, and action will need to intensify if Australia is to reduce its emissions in line with the critical 1.5°C goal.

The challenge sits across several dimensions, not just emissions reductions. Other actions are needed to transform Australia's economy into a globally competitive low-carbon economy. Climateworks' well-below-2°C and 1.5°C scenarios, part of our 2023 decarbonisation scenarios, show that to achieve the least-cost emissions reduction pathway and goals of the Paris Agreement, Australia would:

+ reduce emissions by 48–68 per cent by 2030, compared to 2005 levels
+ generate 83–90 per cent of electricity from renewables by 2030
+ increase the rate of new electric vehicle sales to 56–73 per cent by 2030
+ improve energy efficiency and standards and electrify buildings, with emissions from the buildings sector reaching near zero between 2045 and 2050
+ increase energy efficiency and electrification and deploy zero- or low-emissions fuels and feedstock in the industry and resources sectors
+ reduce direct emissions from agriculture by 18–19 per cent by 2050 and adopt sustainable land management practices.

While states and territories have made progress against these key benchmarks and have demonstrated leadership in some policy areas, they cannot do this work alone. Australia's sectors – and their emissions – traverse state and territory boundaries, and collaboration between state, territory and federal governments is needed to ensure Australia is on a least-cost emissions reduction pathway.

Australia has made significant progress over the last decade in its efforts to reduce emissions through policies and programs, and the leadership shown by states and territories provides a strong foundation for further action. Provided decarbonisation occurs quickly and effectively, Australia's abundant renewable energy resources, natural assets and skilled workforce position the country to be a world leader in the net zero transition. Adopting a net zero mindset – i.e. integrating 1.5°C-aligned climate goals into foundational policies and governmental processes across national and subnational levels, putting climate at the heart of decision-making – will allow Australia to prosper in a global net zero economy.

Every Australian state and territory is committed to net zero emissions by 2050 or sooner

State, territory and federal government net zero targets cover direct and indirect emissions produced within jurisdictional borders.[3] The Australian Government and five states and territories have legislated their net zero targets, with two additional state governments introducing bills in their parliaments to do so (Figure 1).

The Australian Government currently has a legislated interim emissions reduction target of 43 per cent below 2005 levels by 2030 (Australian Government 2023). In 2025, it is expected to announce a 2035 target as part of Australia's updated commitment to the Paris Agreement, its nationally determined contribution (DCCEEW 2024a). Achieving Australia's emissions reduction targets will be a nation-wide endeavour – states and territories make significant contributions to achieving national targets. Five states and territories have interim 2030 emissions reduction targets of their own, ranging from 30 to 75 per cent, while Tasmania has already reached net zero emissions.

FIGURE 1: State and territory emissions targets and data[4]

AUSTRALIA

Target:	Net zero emissions by 2050
Target set:	2021 (2050 target), updated in 2022 (legislation and interim targets)
Net zero legislated:	Yes, including: + Net zero emissions by 2050 + A 2030 interim target and a process for setting additional interim targets + An annual climate change statement that details the year's progress towards achieving reduction targets
Interim target(s):	43% below 2005 levels by 2030
Target legislation:	Climate Change Act 2022
2022 emissions:	431.9 Mt

WESTERN AUSTRALIA

Target:	Net zero emissions by 2050
Target set:	2019
Net zero legislated:	No[5]
Interim target(s):	None[6]
Target policy:	Western Australian Climate Policy
2022 emissions:	82.5 Mt, 19.1% of Aus total

SOUTH AUSTRALIA

Target:	Net zero emissions by 2050
Target set:	2015
Net zero legislated:	No. A 60% reduction on 1990 levels by 2050 is legislated (Climate Change and Greenhouse Emissions Reduction Act 2007), with a bill introduced to Parliament to legislate the net zero by 2050 target and an interim target of a 60% reduction on 2005 levels by 2030 (Climate Change and Greenhouse Emissions Reduction (Miscellaneous) Amendment Bill 2024).
Interim target(s):	At least 60% reduction on 2005 levels by 2030
Target policy:	Government action on climate change
2022 emissions:	15.8 Mt, 3.7% of Aus total

[3]Due to the way countries have agreed to measure their emissions, federal, state and territory governments emissions targets do not yet cover Australia's scope three emissions – those that occur outside of Australia's borders as a result of the country's actions. These include emissions resulting from the use of Australian exports – such as coal, liquified natural gas and iron ore – as well as emissions from the production of goods that are imported to Australia.
[4]Most recent emissions data sourced from the Australian National Greenhouse Accounts (DCCEEW 2024b).
[5]In November 2023, the Western Australian Government introduced a bill to legislate the net zero by 2050 target but the bill has not yet passed (Climate Change Bill 2023).
[6]Western Australia's Climate Change Bill 2023 includes a requirement to set interim targets from 2035 to 2045 after the Australian Government announces each nationally determined contribution. Western Australia has set a whole-of-government emissions reduction target of 80 per cent below 2020 levels by 2030.

NORTHERN TERRITORY

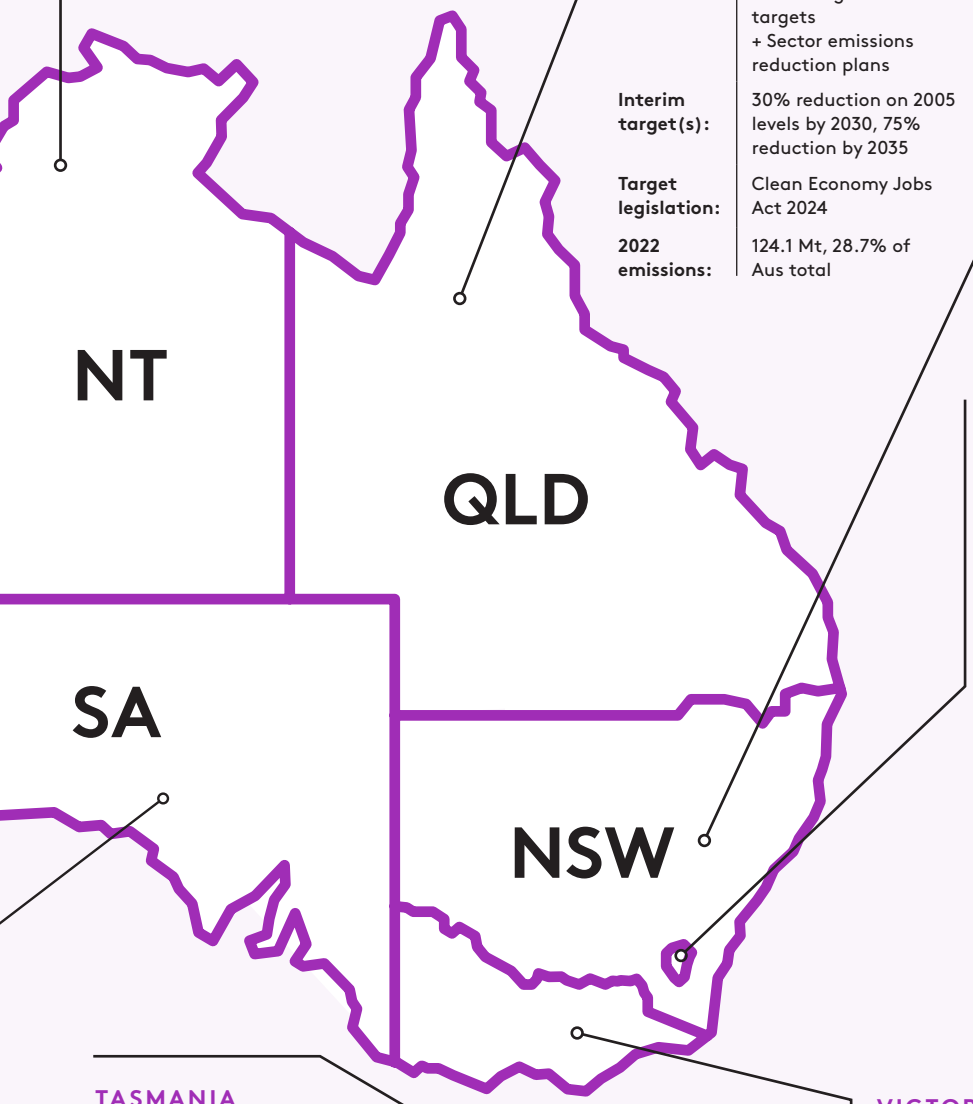
Target:	Net zero emissions by 2050
Target set:	2020
Net zero legislated:	No
Interim target(s):	None
Target policy:	Northern Territory Climate Change Response: Towards 2050
2022 emissions:	16.7 Mt, 3.9% of Aus total

QUEENSLAND

Target:	Net zero emissions by 2050
Target set:	2017, legislated and interim targets updated in 2024
Net zero legislated:	Yes, including: + Net zero emissions by 2050 + Interim targets for 2030 and 2035, with a process for setting 2040 and 2045 targets + Sector emissions reduction plans
Interim target(s):	30% reduction on 2005 levels by 2030, 75% reduction by 2035
Target legislation:	Clean Economy Jobs Act 2024
2022 emissions:	124.1 Mt, 28.7% of Aus total

NEW SOUTH WALES

Target:	Net zero emissions by 2050
Target set:	2016, legislated and updated in 2023
Net zero legislated:	Yes, including: + Net zero emissions by 2050 + Interim targets for 2030 and 2035, with a process for setting 2040 and 2045 targets
Interim target(s):	50% reduction on 2005 levels by 2030, 70% reduction by 2035
Target legislation:	The Climate Change (Net Zero Future) Act 2023 No 48
2022 emissions:	111.0 Mt, 25.7% of Aus total



AUSTRALIAN CAPITAL TERRITORY

Target:	Net zero emissions by 2045
Target set:	2010 (2060 target), updated 2016 (2050 target), updated 2018 (2045 target)
Net zero legislated:	Yes, including: + Net zero emissions by 2045 + Interim targets and a process for setting additional targets + Annual reporting on progress by an independent entity
Interim target(s):	50–60% reduction on 1990 levels by 2025, 65–75% reduction by 2030, and 90–95% reduction by 2040
Target legislation:	Climate Change and Greenhouse Gas Reduction Act 2010
2022 emissions:	1.3 Mt, 0.3% of Aus total

TASMANIA

Target:	Net zero emissions, or lower, by 2030 (achieved in 2014)
Target set:	2017 (2050 target), updated 2022 (2030 target)
Net zero legislated:	Yes, including: + Net zero emissions by 2030 + A process for setting interim targets through regulation + Annual reporting on progress + Sector-based emissions reduction and resilience plans
Interim target(s):	None –2030 net zero target already achieved
Target legislation:	Climate Change (State Action) Act 2008
2022 emissions:	-4.3 Mt, -1% of Aus total

VICTORIA

Target:	Net zero emissions by 2045
Target set:	2016 (2050 target), legislation updated in 2024 (2045 target)
Net zero legislated:	Yes, including: + Net zero emissions by 2045 + Interim targets to 2035, with a process for setting interim targets at five-year intervals to 2045 + New strategies at five-year intervals to 2045
Interim target(s):	28–33% reduction on 2005 levels by 2025, 45–50% reduction by 2030, 75–80% reduction by 2035
Target legislation:	Climate Change Act 2017, with amendments passed in 2024
2022 emissions:	84.7 Mt, 19.6% of Aus total

The significant role of states and territories in the global net zero transition

Subnational governments, both in Australia and around the world, play a crucial role in the global energy transition by spearheading initiatives that promote sustainability and reduce carbon emissions. They create innovative local policies that respond directly to their jurisdiction's comparative advantage and their communities' unique needs and circumstances, enhancing local resilience, creating jobs and fostering sustainable development within their regions.

Australia is committed to the goals of the Paris Agreement, which aims to limit global warming to well below 2°C, and preferably to 1.5°C (UNFCCC 2015).

Climateworks Centre decarbonisation scenarios 2023 shows rapid decarbonisation is required for Australia to meet its commitment to the Paris Agreement. In a scenario where Australia contributes its fair share of the effort to limit global warming to 1.5°C, emissions decline by 85 per cent by 2035 and reach net zero by 2039. In a well-below-2°C scenario, emissions decline by 61 per cent by 2035 and reach net zero by 2050 (Climateworks Centre 2023a). Our analysis shows significant change would need to occur in each economic sector to realise either of the global temperature goals.

States and territories are responsible for implementing and governing many of the significant changes needed to reduce Australia's emissions, including in emissions-intensive sectors such as energy, industry and transport.

Several levers for change are available to states and territories. These include sector-specific legislation, planning and environmental rule changes, funding, or operational changes to state- or territory-owned monopolies such as power and water utilities and public transport. States and territories also contribute to coordinated national action by participating in Ministerial Councils, co-funding initiatives with the Australian Government, or coordinating and implementing federally funded programs within their jurisdiction.

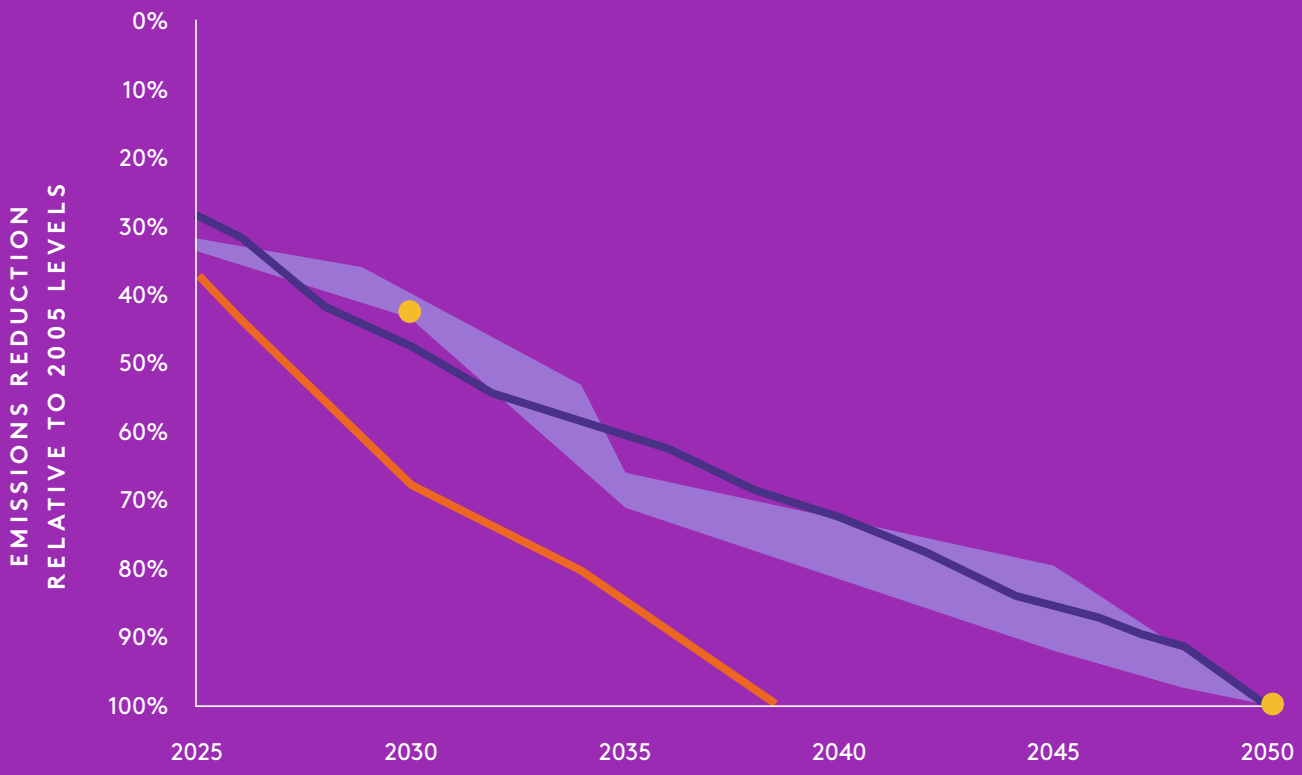
State and territory government actions to reduce emissions, either in isolation from federally-funded programs or as part of them, contribute directly and significantly to national action on mitigating climate change.

Setting national and subnational emissions reduction targets – including interim targets – is an important lever governments can use to show their ambition to reduce emissions. It also sends a clear message about the activities that are likely to be prioritised by those governments, allowing entities who want to do business in those jurisdictions to limit their risk on investment, projects and activities. Beyond setting targets, legislating targets creates more certainty as it requires Ministers to plan for the transition and for government-controlled entities to consider emissions as part of their decision-making.

For this report, we have aggregated state and territory emissions reduction targets to determine the current level of consolidated national ambition (see Information box 1). These consolidated state and territory targets can also be interpreted as a national equivalent target that the Australian Government can build upon through further targeted national actions.

Figure 2 shows the results of this analysis, with the calculated national equivalent target range to 2050 (light purple) compared to *Climateworks Centre decarbonisation scenarios 2023* 1.5°C (orange) and well-below-2°C (dark purple) scenarios and current Australian Government emissions reduction targets.

FIGURE 2: NATIONAL EQUIVALENT EMISSIONS REDUCTION TARGET RANGE COMPARED TO CLIMATEWORKS' 2023 DECARBONISATION SCENARIOS AND AUSTRALIAN GOVERNMENT EMISSIONS REDUCTION TARGETS



FEDERAL INTERIM EMISSIONS REDUCTION TARGETS

NATIONAL EQUIVALENT STATE AND TERRITORY TARGET RANGE

1.5°C SCENARIO: CLIMATEWORKS' 2023 DECARBONISATION SCENARIOS (PERCENTAGE REDUCTION RELATIVE TO 2005 LEVELS)

WELL-BELOW-2°C SCENARIO: CLIMATEWORKS' 2023 DECARBONISATION SCENARIOS (PERCENTAGE REDUCTION RELATIVE TO 2005 LEVELS)

Climateworks' calculated national equivalent target shows:

+ Combined, state and territory targets add up to an estimated 40–44 per cent reduction in Australia's emissions from 2005 levels by 2030, and are broadly consistent with the Australian Government's emissions reduction targets of 43 per cent by 2030 and net zero by 2050. This puts current national targets within reach, provided state and territory governments actively work towards implementing and delivering their commitments.
+ State and territory climate targets are broadly aligned with emissions reductions needed to limit warming to well below 2°C, but increased ambition is required from 2027 to 2032 to be fully aligned to limiting warming to less than 2°C.
+ Current state and territory targets do not meet ambition needed to limit warming to 1.5°C.
+ Combined, Australian state and territory climate targets already add up to an estimated 66–71 per cent reduction in Australia's emissions by 2035.

INFORMATION BOX 1:

Determining the national equivalent emissions reduction target range

We determined the national equivalent target by analysing possible trajectories from Australia's latest (2022) emissions data (DCCEEW 2024b) up to and between announced state and territory emissions reduction targets to 2050.

Not all emissions targets are equal. Targets are not consistent across jurisdictions and have differing baseline and target years. Additionally, not all states and territories have interim targets. To overcome this, we assessed multiple scenarios with different assumed rates of action,[7] resulting in a range of national equivalent targets each year to 2050. These scenarios also account for jurisdictions with emissions reduction targets as a range in a specific year (e.g. Victoria's 45–50 per cent by 2030 target).

Our analysis assumes that state and territory jurisdictions meet their commitments, work towards their longer-term targets even when interim targets are absent, and do not regress on emissions reductions already delivered. The national equivalent target is an assessment of what could be possible if states and territories act in line with their commitments rather than an assessment of current policies or a likely projection of national emissions.

Based on state and territory government commitments, Australia is on track to meet its current 2030 national emissions target of 43 per cent.

[7]The growth rates used in estimating emissions between target years are based on a combination of linear trajectories, zero emissions growth where targets are already exceeded, and a three year trailing average of annual emissions growth. The rates do not analyse impacts from other specific climate policies (such as renewable energy targets), which may influence the ability of a jurisdiction to meet or exceed their announced emissions reduction targets.

Coordinated policy action across Australia is needed to ensure current state and territory targets can be achieved and strengthened to align with a 1.5°C emissions reduction pathway. The Australian Government is currently developing national emissions reduction plans for six sectors – electricity and energy, transport, industry, agriculture and land, resources and the built environment (DCCEEW 2024g). State and territory policy and action are expected to play a key role in the sector plans as well as in their implementation, especially in sectors where much of the responsibility for action rests with states and territories. In this report, we have adapted our analysis to broadly match Australia's sectoral pathways and plans framework.

Some states and territories are also developing their own sector emissions reduction plans. Queensland, for example, has legislated that Queensland sector plans be developed by the end of 2025 as part of its Clean Economy Jobs Plan (Queensland Government 2024a). In Tasmania, legislation requires the government to develop sector-based Emissions Reduction and Resilience Plans in consultation with business, industry and the community (ReCFIT 2024). Victoria has similarly legislated the development of pledges outlining future government action to reduce emissions in each sector (Victoria State Government 2017).

The Climate Change Authority's Sectoral Pathway Review, released in September 2024, clearly outlines the need for cooperation between states and territories and the Australian Government as Australia's Net Zero Plan is implemented:

> *'… states and territories have a significant role to play given their authority over many energy, infrastructure and transport projects. Close cooperation between the Australian Government and states and territories will therefore be necessary to ensure policy and legislative alignment' (Climate Change Authority 2024a).*

State and territory governments – often in partnership with the Australian Government – have implemented policies and programs to reduce emissions in their jurisdictions.

Our 2024 analysis finds incremental improvements from our 2022 findings, which showed a national equivalent emissions reduction range of 37–42 per cent below 2005 emissions by 2030 (Climateworks Centre 2022). Progress is being made towards strengthening subnational targets, but more work is needed to reduce emissions in line with limiting warming to 1.5°C.

The following sections present leading state and territory policies and programs (announced before September 2024) from each sector – electricity, transport, buildings, industry, resources and agriculture and land. We also identified key areas of opportunity where more work can be done.

Electricity

Electricity generation is Australia's largest source of emissions, with 65 per cent of electricity currently generated by burning fossil fuels (DCCEEW 2024c). From 2023 to 2030, the Australian Government projects the electricity sector will have the strongest emissions decline compared to all other sectors – declining by 46 per cent (DCCEEW 2023). This decline is driven by supportive national and subnational policies and the continued rollout of renewable energy and storage – technologies proving to be most commercially effective (DCCEEW 2023; CSIRO 2024).

The aim

In Climateworks' well-below-2°C and 1.5°C scenarios, wind, solar, pumped hydro and battery storage generate 83–90 per cent of Australia's electricity[8] by 2030. Emissions from the electricity sector near zero by 2034 in the scenario limiting warming to 1.5°C, and by 2038 in the scenario limiting warming to well below 2°C.

The scale of the task on electricity is unprecedented. In both scenarios, electricity demand increases drastically as other sectors of the economy electrify. By 2050, Australia could need around triple the electricity generated today – up from 273 TWh to 932 TWh. To ensure a reliable electricity supply, 44–55 GW of battery storage is deployed by 2050. Demand response measures,[9] such as businesses and households shifting electricity use to periods of low demand, could also help stabilise the grid. Energy efficiency improvements can help lower electricity demand. In Climateworks' well-below-2°C and 1.5°C scenarios, energy efficiency improves nearly 400 per cent by 2050 across the buildings and industry sectors.

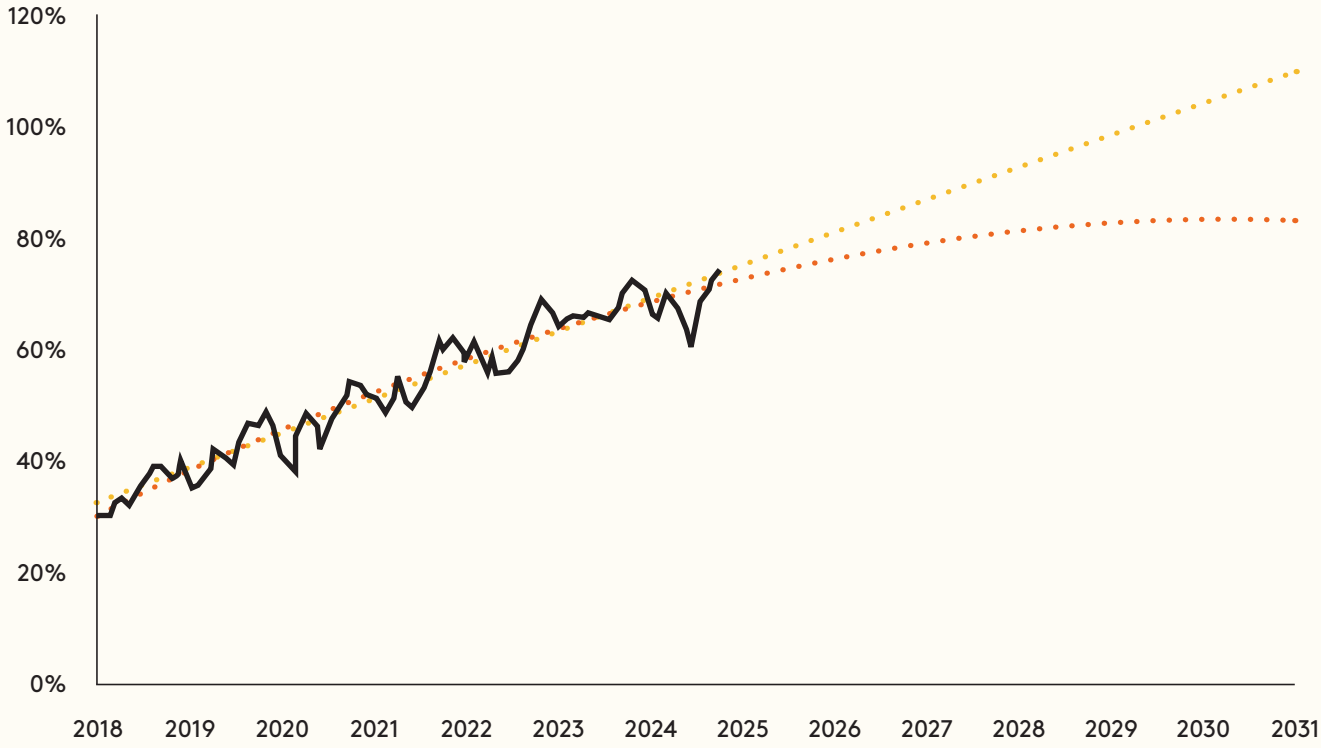
[8]Climateworks' modelling includes all of Australia's major electricity grids. Off-grid modelling is limited to particular zones in Western Australia.
[9]Climateworks' modelling does not fully account for the benefits of demand management.

ELECTRICITY

Progress so far

The cost curve for renewable energy projects has trended down, and renewable electricity has been a national and subnational policy focus, driving a continued increase in renewable electricity capacity and generation. As seen in Figure 3, the National Electricity Market (NEM) reached a new record for maximum renewable electricity generation in October 2024 of 74 per cent.

FIGURE 3: MONTHLY MAXIMUM PERCENTAGE OF RENEWABLE ENERGY GENERATION IN THE NATIONAL ELECTRICITY MARKET



ACTUAL MONTHLY MAXIMUM RENEWABLE ENERGY GENERATION % IN NEM[10]

LINEAR TREND LINE ($R^2 = 0.93$)

POLYNOMIAL TREND LINE ($R^2 = 0.93$)

If this trend continues, the NEM could reach 82 per cent renewables – the current 2030 federal target – by around 2028.

[10] Data source: Australian Energy Market Operator Data Dashboard – accessed 10 October 2024 (AEMO 2024).

The majority of states and territories have set renewable energy targets:

- ACT: 100 per cent renewables by 2020 (legislated)
- NT: 50 per cent renewables by 2030 for grid-connected generation, which makes up less than half of the territory's total generation
- Qld: 50 per cent by 2030, 70 per cent by 2032 and 80 per cent by 2035 (legislated)
- SA: 100 per cent by 2027, with a bill introduced to Parliament in August 2024 that would legislate this target
- Tas: 150 per cent by 2030 and 200 per cent by 2040 based on 2022 levels (legislated)
- Vic: 40 per cent by 2025, 65 per cent by 2030 and 95 per cent by 2035 (legislated).

States and territories are working towards achieving their targets:

- The ACT has achieved 100 per cent renewable electricity since 2020, achieved through contract agreements with wind and solar farms in the ACT, NSW and SA.
- Tas has achieved more than 98 per cent renewable electricity generation each year since 2020.
- SA achieved 70 per cent renewable electricity in 2023.

Renewable Energy Zones (REZs) are accelerating the rollout of renewables:

- NSW has declared five REZs, with the intent of unlocking 14 GW of network capacity by 2033.
- Qld has developed a roadmap for twelve REZs across three regions, with three currently in development.
- Vic is developing plans for REZs, with a goal to unlock 10 GW of capacity across its REZs.

Some jurisdictions have announced the phase-out of coal power stations:

- WA has committed to retire its state-owned coal power stations by 2030.
- Qld's state-owned coal power stations will be transformed into clean energy hubs by 2035.

States and territories are collaborating with the Australian Government to continue the rollout of renewables:

- WA, SA and the ACT have signed Renewable Energy Transformation Agreements with the Australian Government to collaborate across priority areas supporting national energy transformation.
- Vic, SA and NSW are collaborating with the Australian Government to deliver reliable renewable electricity through the Capacity Investment Scheme.

The planning and rollout of energy storage systems has been a focus for governments:

- NSW has set a target of 2 GW of long-duration storage by 2030.
- Vic has set targets of 2.6 GW by 2030 and 6.3 GW by 2035 for short-, medium- and long-duration energy storage.
- All jurisdictions have large grid battery or hydropower projects.

See Appendix for all references for state and territory government actions listed above.

ELECTRICITY

More to be done

The electricity sector is a significant focus of state and territory decarbonisation efforts. Governments can build on this momentum by focusing on areas such as:

Renewable energy and storage targets

Most states and territories have renewable energy targets, and even those without targets are still taking action. However, there is an opportunity for all states and territories to set both renewable energy and storage targets, providing greater development and investment certainty to achieve the required scale of renewable energy. As sectors decarbonise, demand for renewable electricity will increase, and jurisdictions with high renewable capacity could set targets greater than 100 per cent where there are established or planned transmission lines across neighbouring state and territory borders.

Grid upgrades

Planning and implementing system infrastructure updates are progressing through initiatives such as renewable energy zones and large network infrastructure upgrades. Grid transformation to accommodate increased customer or distributed energy resources and demand management can alleviate grid congestion and help to efficiently manage the electricity system. The rollout of renewables and storage needs to accelerate to support electrification in other sectors and to meet the Australian Government's 82 per cent renewable energy by 2030 target.

Electricity demand management and energy efficiency

Some action has been taken to provide incentives to manage and reduce peak demand, such as time-of-use tariffs and smart meter rollouts. There is an opportunity to connect more appliances, like hot water heat pumps, air conditioning and vehicle-to-grid technology, to demand or energy management solutions. Industrial loads could also be connected to demand management solutions. Those jurisdictions with energy efficiency schemes can ensure they have a greater impact and more jurisdictions could adopt multi-sector energy efficiency targets to further counteract increases in electricity demand and improve energy performance. This could also contribute to the global pledge Australia agreed to in November 2023 to double energy efficiency improvements, achieving a rate of 2 to 4 per cent, or more, every year until 2030 (UNFCCC 2023).

Just transition and skills

Support packages for communities affected by the energy transition are being implemented, such as in Collie, Western Australia (Government of Western Australia 2024c). There is scope for similar support to be provided to other communities and for it to include a greater focus on workforce development. To reach Australia's 82 per cent renewables target, Jobs and Skills Australia estimates that an additional 32,000 electricians could be needed by 2030. This number increases to 42,500 if Australia onshores green manufacturing and generates renewable electricity beyond its domestic consumption (Percapita 2024). There is also an opportunity to build dialogue with communities through early and meaningful engagement, ensuring communities benefit from renewable energy policies. A particular focus for this effort could be on First Nations people on whose land renewable energy projects are proposed.

CASE STUDY

New South Wales Renewable Energy Zones

In November 2020, the New South Wales Government released its Electricity Infrastructure Roadmap, a 20-year plan to ensure the state's electricity system is affordable, clean and reliable (NSW DPIE 2020). The roadmap will deliver five REZs in the state, strategically located in areas with high renewable energy potential, including Central-West Orana, New England, South-West, Hunter-Central Coast and Illawarra.

The REZs will be located where new renewable energy generation can be efficiently stored and transmitted across New South Wales (NSW Government n.d.). In addition to providing reliable, clean energy at lower costs for New South Wales consumers, the REZs will bring co-benefits such as increasing emerging green manufacturing capacity, supporting energy-intensive agriculture and building export market opportunities.

In 2024, the Central-West Orana REZ transmission project secured state and federal planning approvals, allowing the construction of new transmission lines and energy hubs to transfer power from solar and wind farms to consumers (NSW Government n.d.). Once complete, the project will unlock 4.5 GW of network capacity and is expected to deliver $3 billion in net benefits for energy consumers, drive $20 billion in regional investment and support 5,000 jobs during peak construction (DCCEEW 2024d).

CASE STUDY

Western Australia's South West Interconnected System Demand Assessment

In 2022, the Government of Western Australia, in collaboration with industry, assessed industrial electricity demand over the next 20 years in the South West Interconnected System (SWIS). The SWIS Demand Assessment identified the least-cost mix of wind, solar, gas and storage capacity to meet government and industry emissions reduction targets. The SWIS Demand Assessment found that by 2030, 80 per cent of electricity will come from renewables, increasing to 96 per cent by 2042. Peak electricity demand could triple by 2042, requiring 50 GW of new capacity. An additional 4,000 km of new transmission lines are expected to be required over the next 20 years (Government of Western Australia 2023). In 2024, the Government of Western Australia established PoweringWA, a new agency to coordinate Western Australia's electricity system transformation (PoweringWA n.d.).

CASE STUDY

The Queensland Energy and Jobs Plan

The Queensland Government launched the Queensland Energy and Jobs Plan in September 2022, detailing how the state's energy system will transform to deliver clean, reliable and affordable power for generations (Queensland Government 2022).

Independent modelling, commissioned by the Queensland Government, to support the Queensland Energy and Jobs Plan's development shows that if the plan were to be fully implemented, the Queensland Government would:

+ beat its 50 per cent renewables by 2030 target
+ decrease its electricity sector emissions by 90 per cent by 2035, compared to 2005 levels
+ create 100,000 direct and indirect jobs by 2040 (Queensland Government 2022).

The plan consists of actions across three categories: clean energy economy, empowered households and businesses, and secure jobs and communities. In 2023, the Queensland Government released a report on how they have progressed with these actions, showing extensive headway (Queensland Government 2023).

CASE STUDY

Renewable Energy Transformation Agreements signed by South Australia, Western Australia and the Australian Capital Territory

In July 2024, South Australia and Western Australia became the first states to sign a Renewable Energy Transformation Agreement with the Australian Government (DCCEEW 2024f). These agreements are part of the Australian Government's plan to develop 32 GW of renewable generation and storage by 2030 under the Capacity Investment Scheme.

For South Australia, this means Australian Government funding support for 1 GW of wind and solar projects and 0.4 GW of storage to ensure continuous renewable power availability to households and businesses. The Australian and South Australian governments have also committed to improving community engagement, project planning and approval processes, as well as bolstering skills and workforce outcomes.

For Western Australia, it means developing a minimum of 6.5 TWh of new wind and solar projects and 1.1 GW of new storage capacity. The Government of Western Australia has also committed to retiring state-owned coal power stations (all Muja units and Collie Power Station) in Collie by 2030 (DCCEEW 2024f).

In September 2024, the Australian Capital Territory became the third jurisdiction to sign a Renewable Energy Transformation Agreement. The agreement will boost efforts underway to electrify homes and businesses, contribute to Australia's 82 per cent renewable electricity by 2030 target, and enhance community engagement and social and economic outcomes (DCCEEW 2024h).

Transport

Transport is Australia's fastest-growing source of emissions and is projected to be the highest emitting sector by the end of the decade (DCCEEW 2023). Despite this, solutions to decarbonise transport already exist, and states and territories have begun implementing policies to reduce the sector's emissions. To date, governments have focused on technology-based policy solutions over solutions that reduce or avoid the need to travel or shift passengers and freight to less emissions-intensive modes.

The aim

Australia's transport emissions decline by 91 per cent by 2050 in both Climateworks' well-below-2°C and 1.5°C scenarios. This decline is driven by the uptake of zero-emissions electric or hydrogen fuel cell cars and trucks and an increased use of other low-emissions fuels in areas like aviation. In the well-below-2°C scenario, 56 per cent of new car sales are zero-emissions vehicles (ZEVs) by 2030, and in the 1.5°C scenario, 73 per cent are ZEVs. Transport planning that uses the globally recognised Avoid, Shift and Improve (ASI) framework[11] can reduce emissions further (Climateworks Centre 2024a). The ASI framework includes optimising travel routes and land use planning to minimise transport demand ('Avoid'), shifting passengers and freight to low-emissions modes such as public and active transport and rail freight ('Shift') and improving vehicle and fuel efficiency ('Improve').

[11]The ASI framework is globally recognised and adopted in transport decarbonisation planning (SLOCAT 2023). It classifies interventions into three categories: 1) avoiding or reducing the level of transport activity, for example, land use planning, route optimisation and demand management, 2) shifting to lower-emissions modes of transport, for example, public transport, active transport and freight on rail, and 3) improving energy efficiency of vehicles and fuels, for example, ZEVs and low-carbon fuels.

TRANSPORT

Progress so far

Half of states and territories have new car sales targets for ZEVs:	+ ACT: 80–90 per cent by 2030, 100 per cent by 2035 + NSW: 52 per cent by 2031 + Qld: 50 per cent by 2030, 100 per cent by 2036 + Vic: 50 per cent by 2030.
Electric vehicle (EV) charger network rollouts continue to build momentum through government programs, such as:	+ ACT Public EV Charging Infrastructure Fund + NSW EV Fast Charging Grants + Qld's Electric Super Highway + The WA EV Network.
States and territories continue to support consumers to purchase EVs through:	+ rebates for new ZEVs in Tas and WA + stamp duty waivers in ACT and discounts in NT + discounted registration for zero- and low-emissions vehicles in ACT, Qld, Vic and free registration in NT and SA.
Active travel is forming a part of transport strategies and programs:	+ WA has allocated $300 million over four years to develop active transport infrastructure such as walking and riding paths.
Most jurisdictions have programs to transition their government bus fleets to zero-emissions vehicles:	+ ACT: all buses by 2040 + NSW: all Sydney buses by 2035; outer metropolitan regions in 2040; and regional NSW in 2047 + Qld: new buses in South East Queensland from 2025; and new buses across regional Queensland from 2025–2030 + Vic: all public transport bus purchases to be ZEVs from 2025 + WA: 130 new electric buses.
Most jurisdictions are expanding their urban rail networks:	+ ACT: Light Rail Stage 2a + Qld: Cross River Rail + NSW: Sydney Metro + Vic: Metro Tunnel + WA: METRONET.

See Appendix for all references for state and territory government actions listed above.

TRANSPORT

More to be done

Governments have the opportunity to do more to curb transport's rising emissions by prioritising areas such as:

Transport planning and targets

There is an opportunity for governments to use existing decision-making and funding mechanisms to prioritise transport options with the lowest emissions. Incorporating ASI principles into transport planning can help promote sustainable transport options and better transport outcomes. Setting ZEV and mode shift targets can support the necessary changes in the transport sector.

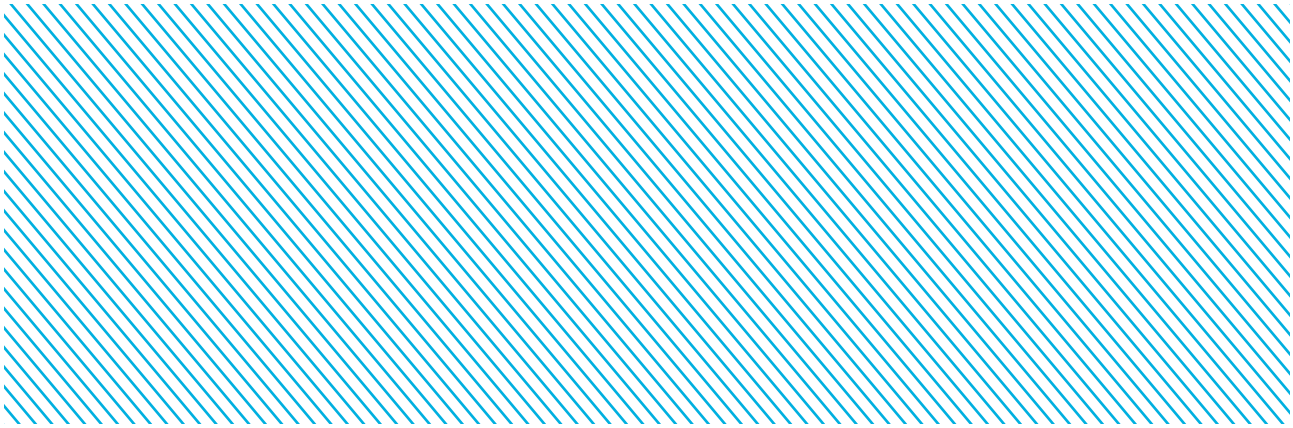
Mode shift and demand management

Governments can diversify their transport decarbonisation solutions by implementing measures that promote greater shifts to public and active transport, including by making these options more accessible and attractive. There are also opportunities to increase freight transport via rail by increasing rail capacity, operational reliability and intermodal integration. Through land use planning, states and territories can move people and goods more efficiently, reducing transport volumes.

ZEVs and supporting infrastructure

Sales of passenger electric vehicles in Australia have increased in recent years, reaching around 7 per cent of new car sales in 2023 (Climateworks Centre 2024a). However, this is well below the pace required to reduce emissions in line with 1.5°C. Governments can help drive the transition to ZEVs by developing the necessary supporting infrastructure and helping to bring down the cost of ownership. This could include supporting a second-hand electric vehicle market and offering grants, registration waivers or moving to an emissions-based registration scheme.

Passenger vehicles are only a portion of the transport story. Significant opportunities exist for governments to transition short- and long-haul freight vehicles by offering companies incentives, addressing ownership costs, supporting trials and implementing carefully designed road-use pricing. Battery-electric trucks have a higher steer-axle mass than their diesel-powered counterparts, and current steer-axle mass limitations prevent battery-electric trucks from being allowed on Australia's roads. Removing or relaxing these limitations for zero-emissions trucks can enable higher uptake.



CASE STUDY

Transport for New South Wales' Towards Net Zero Emissions Freight Policy

The Towards Net Zero Emissions Freight Policy sets out actions to achieve emissions reductions across New South Wales's road and rail freight sector, supporting a transition to low-emissions vehicles and ZEVs (Transport for NSW 2023). The policy was developed through consultation with the freight industry, vehicle manufacturers, service providers and local, state and federal governments.

A two-year trial will provide road access to zero-emissions heavy vehicles that weigh more than the current mass limit. The trial will provide the necessary evidence for ongoing road access and network management.

A knowledge hub and vehicle comparison tool will provide information on low-carbon technologies and how they compare to diesel-powered incumbents.

CASE STUDY

Australian Capital Territory's Zero Emissions Vehicle Strategy

The Australian Capital Territory's Zero Emissions Vehicle Strategy sets out actions to make owning a ZEV more affordable and accessible (ACT Government 2022). Under the strategy, the ACT Government has committed to:

- setting a target that 80–90 per cent of new vehicle sales are ZEVs by 2030
- exploring the phase-out of new internal combustion engines by 2035
- developing 180 public electric vehicle chargers by 2025.

Policies under the strategy aim to support Canberrans purchasing ZEVs by reducing their cost, increasing their availability and making Canberra an attractive market for ZEV businesses and investment.

The ACT Government has provided strong incentives for purchasing ZEVs, including zero-interest loans through the Sustainable Household Scheme, stamp duty exemptions and two years free registration (ended June 2024). As of July 2024, the Australian Capital Territory has moved to an emissions-based registration fee, offering discounted fees for lower-emissions vehicles.

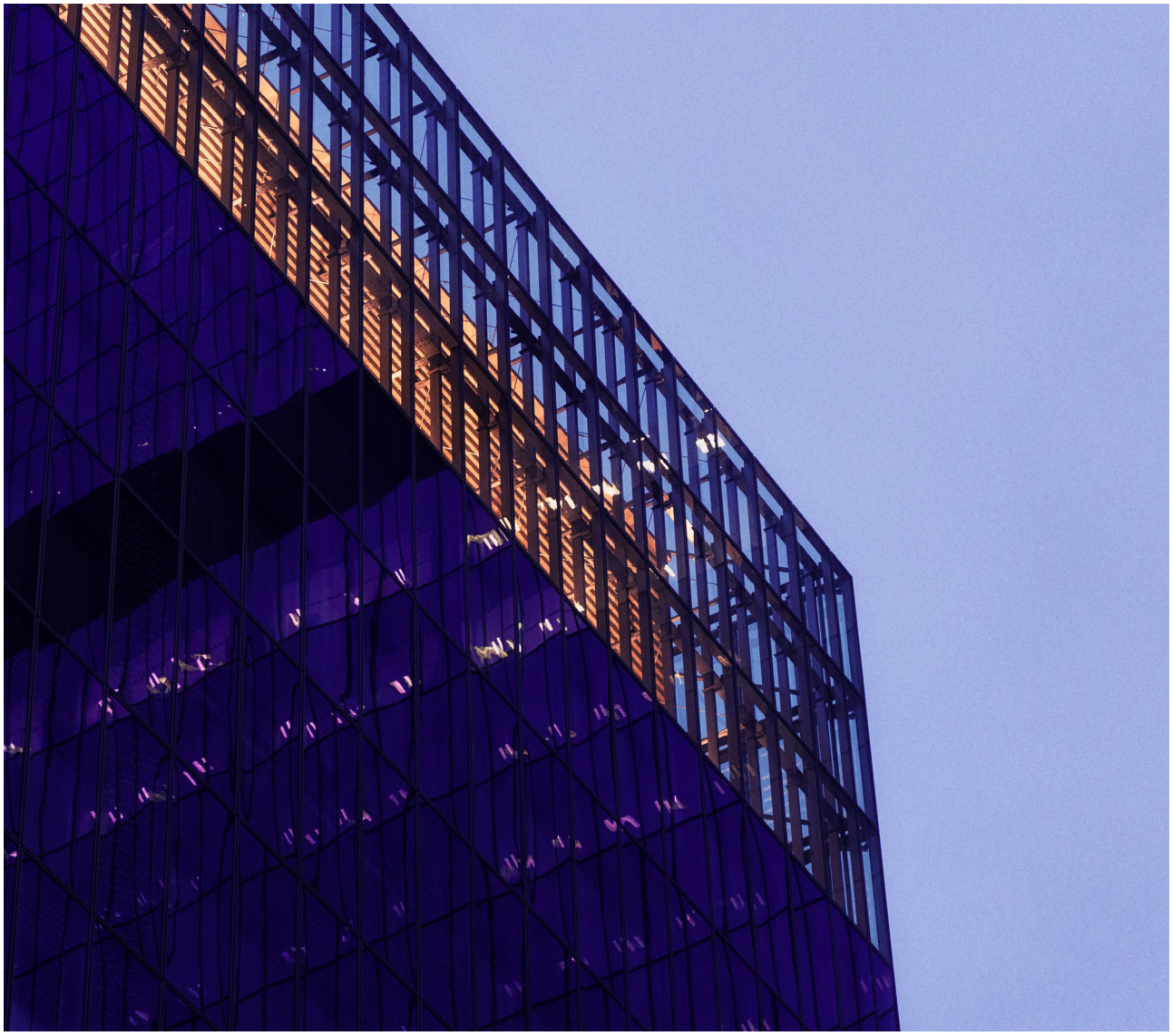
This combination of incentives and policy levers has resulted in the territory having the highest rate of electric vehicle ownership per capita in Australia (ACT Government 2023).

Buildings

Direct emissions from the buildings sector constitute around 6 per cent of Australia's annual emissions (Climate Change Authority 2024b). Many homes and buildings are not energy efficient, nor are they equipped to match high rooftop solar generation with high household energy consumption. Many rely on gas for cooking, indoor heating and heating water. States and territories have implemented policies to support rooftop solar installations, making Australia a world leader in rooftop solar capacity (Adisa 2023). For years, state and territory governments have supported improving building energy efficiency and electrification.

The aim

Emissions from the buildings sector near zero by 2045 in Climateworks' 1.5°C scenario and by 2050 in the well-below-2°C scenario. This is achieved by switching all homes from gas to electricity by 2048 and improving energy efficiency by 41 per cent by 2050. Household rooftop solar continues to be rolled out, more than tripling in capacity by 2050. Improving homes' energy performance through thermal shell upgrades (e.g. double glazing, additional insulation or sealing draughts) can also reduce emissions, improve occupant health and comfort, and lower energy bills (Climateworks Centre 2023c).



BUILDINGS

Progress so far

Rooftop solar penetration continues to increase:

+ In 2023, small-scale solar photovoltaics generated 10 per cent of national electricity and 21 per cent of SA's electricity – the highest percentage nationwide.
+ As of 30 September 2024, 3.9 million rooftop solar systems have been installed in Australia.

All jurisdictions support building energy efficiency upgrades, for example:

+ social housing energy performance upgrades in all states and territories
+ zero-interest loan programs in ACT, Tas and for vulnerable people in WA
+ improved minimum rental standards in ACT, NSW and Vic
+ retailer regulated incentive schemes in ACT, NSW, SA and Vic.

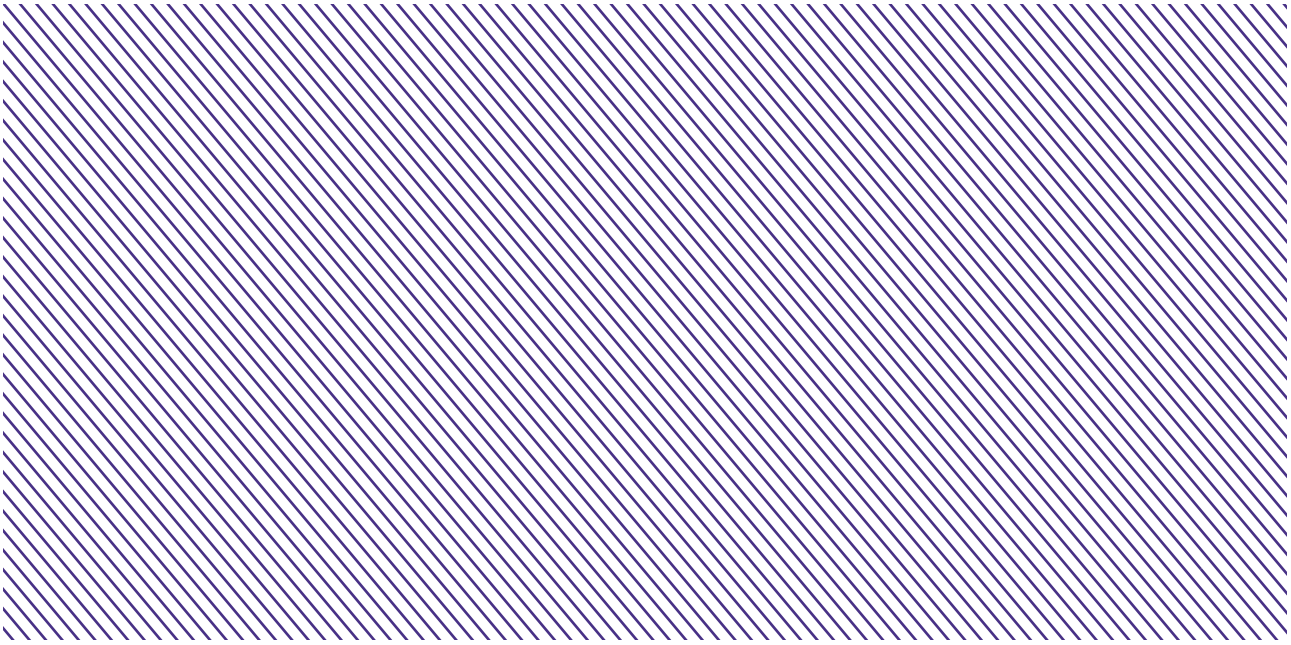
Some jurisdictions are implementing gas network phase-outs, for example:

+ New gas connection bans in ACT and Vic came into force in late 2023 and early 2024, respectively.
+ WA transitioned Esperance from the existing gas network in 2023, resulting in a 38 per cent reduction in energy bills for Esperance residents.

Most jurisdictions are adopting better building standards:

+ ACT, NSW, Qld, SA, Vic and WA have adopted the National Construction Code 7-star energy efficiency requirements for new homes, with certain compliance exemptions granted in SA.
+ ACT phased in minimum rental energy efficiency standards, with consultation for standards in Vic and expansion of the ACT scheme in 2024.

See Appendix for all references for state and territory government actions listed above.



BUILDINGS

More to be done

Australian governments can do more to reduce emissions from the buildings sector by increasing action in three areas:

Standards

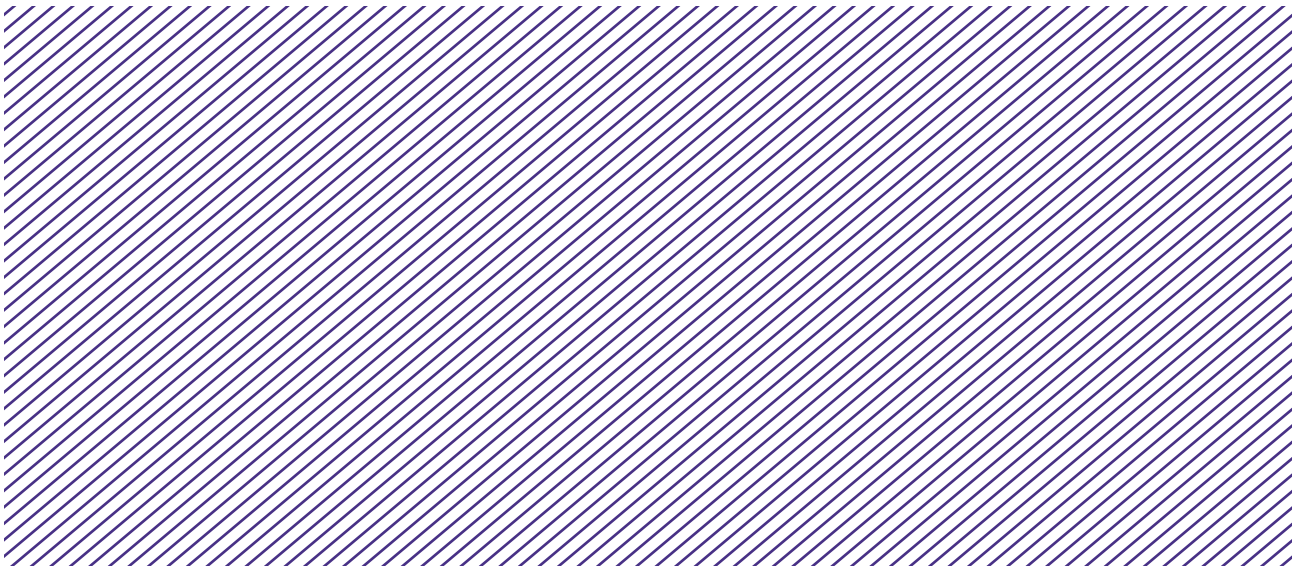
To transition Australia's buildings sector to net zero, an agreed definition or standard for what a zero-carbon building looks like in practice is needed (Climateworks Centre 2023d). Minimum building standards – including energy efficiency standards – could be strengthened to drive improvements in new and existing buildings. There are opportunities for state and territory policy to improve homes by prioritising electrification and thermal upgrades to at least a 3-star energy rating (under the Nationwide House Energy Rating Scheme) before rooftop solar installations.

Thermal performance of new and existing buildings

States and territory governments have increased funding for energy efficiency upgrades. However, more support is needed to improve the energy efficiency of existing low-performing homes (Climateworks Centre 2023c, 2024b). The Australian Capital Territory and Victoria have improved minimum rental standards; other states and territories have the opportunity to follow suit. Work on home energy rating disclosures is underway at the national level (DCCEEW 2024e). States and territories can work with the Australian Government to implement home energy rating disclosures, including linking them to education programs and workforce training.

Efficient electrified appliances

The Australian Capital Territory has a target to phase out gas by 2045 and, along with Victoria, has banned gas connections to new homes. Other states and territories can implement gas phase-out plans, and all jurisdictions can improve or introduce policies to support the installation of efficient electric appliances. High-electricity-load appliances could have smart connections and be connected to demand management systems.



CASE STUDY

Transforming Australian Capital Territory's buildings through the Sustainable Buildings Pathway and Sustainable Household Scheme

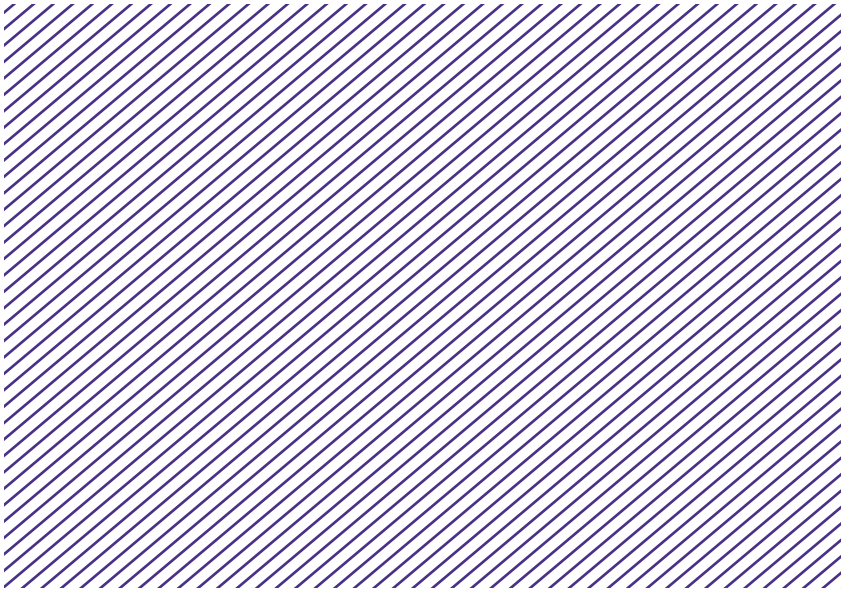
In 2024, the ACT Government released its Sustainable Buildings Pathway. The pathway outlines the vision and policy objectives to reduce buildings' energy use and emissions, ensure buildings are resilient to the changing climate and drive sustainable practices across the industry workforce (ACT Government 2024a).

The ten-year pathway builds on the territory's existing building reform programs and will evolve as sustainable building benchmarks progress. The pathway seeks to minimise impacts on the natural environment and reduce buildings' emissions by phasing out fossil fuel gas, reducing embodied carbon and refrigerant leakages, and improving buildings' energy performance.

Since 2021, the ACT Government has provided interest-free loans for household energy efficiency upgrades through the Sustainable Household Scheme (ACT Government n.d.). Eligible households can access zero-interest loans up to $15,000 for works or capital purchases, including:

+ solar and batteries
+ energy efficient appliances
+ electric vehicles and charging infrastructure
+ ceiling insulation.

The ACT Government established the Sustainable Household Scheme with a $150 million commitment and has since invested a further $130 million into the scheme. Since its launch, the Sustainable Household Scheme has provided $223 million in financing and has supported 20,285 households (ACT Government 2024b). As of 23 October 2024, these households have saved an estimated $56 million on energy bills and vehicle running costs.



CASE STUDY

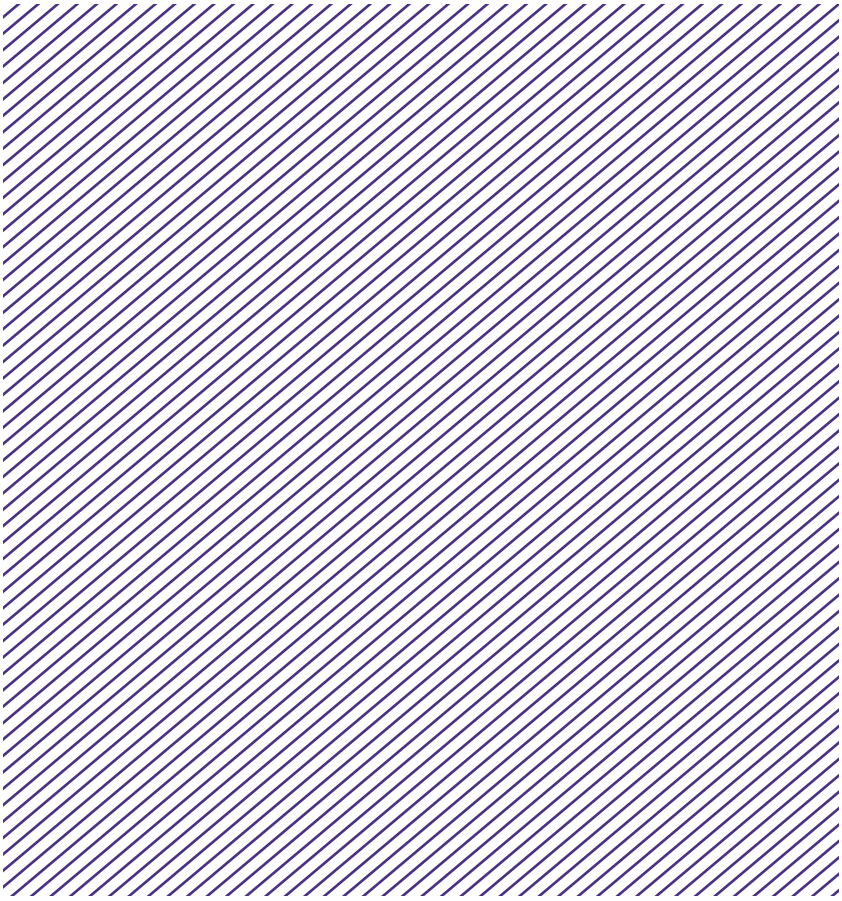
Australian Capital Territory and Victoria's transition from gas to an electric future

The Australian Capital Territory has begun to electrify Canberra and has banned new fossil fuel gas network connections in most areas. This is part of a broader plan to transition away from fossil fuel energy and electrify Canberra by 2045 (ACT Government n.d.). The transition is guided by the territory's Integrated Energy Plan, which sets out the actions, targets and reviews to ensure progress (ACT Government n.d.).

The plan's first of three stages (2024–2030) was released in June 2024 and includes funding for households that most need support, interest-free loans and rebates for electric vehicle chargers, skills development and a commitment to electrify all feasible public and community housing by 2030.

Victoria has also begun transitioning to all-electric homes through its Gas Substitution Roadmap and phasing out new residential gas connections (Victoria State Government 2024, 2022). The Gas Substitution Roadmap outlines how the state will employ energy efficiency, electrification, renewable hydrogen and biomethane to reduce emissions and energy bills.

Victoria has launched a one-stop-shop program through the State Electricity Commission (SEC) to support consumers as they electrify their homes. The first pilot is underway through the SEC Electric Home Planner (SEC n.d.).



Industry

The industry sector – including iron and steel production, chemicals, manufacturing and other industry (e.g. waste) – accounts for around 18 per cent of Australia's energy use and generated around 64 $MtCO_2e$ in 2022 (Climate Change Authority 2024a). The industry sector also contributes significantly to Australia's GDP, with $140 billion generated from manufactured goods exports in 2023 (Climate Change Authority 2024a). This presents both risks and opportunities for Australia in a global net zero emissions economy, and states and territories have begun capitalising on those opportunities.

The aim

In Climateworks' well-below-2°C and 1.5°C scenarios, emissions from the industry sector decline by 23–40 per cent by 2050. However, the industry sector could achieve even greater emissions reductions than our 2023 decarbonisation scenarios suggest. Modelling for the Australian Industry Energy Transitions Initiative showed that emissions from the iron and steel, aluminium and chemicals supply chains could be reduced by 96 per cent or more by 2050, given significant investments in technology, high penetration of renewable energy and large volumes of hydrogen (Climateworks Centre and Climate-KIC Australia 2023). The primary opportunities for reducing emissions from the industry sector are adopting energy efficiency technologies and renewable electricity, increasing metals recycling and switching to low- or zero-emissions fuels. Electricity and hydrogen replace coal and gas for high-temperature process heat and in chemical reactions in the iron and steel, chemicals and alumina subsectors. Carbon capture and storage plays a minor role in reducing emissions from some industry subsectors where alternative decarbonisation options are limited.

INDUSTRY	Progress so far
State and territory governments continue to support industrial decarbonisation through grant schemes, retailer regulation and educational campaigns, such as:	+ NSW's High emitting industries initiative + Qld's Manufacturing Energy Efficiency Grant Program, Manufacturing Hubs Grant Program and Manufacturing Benchmark Program + NSW's Energy Savings Scheme, the Victorian Energy Upgrades for homes program and SA's Retailer Energy Productivity Scheme, which promote energy efficiency in industrial facilities.
State and territory-owned water utilities are setting ambitious net zero targets, with council-owned utilities following suit:	+ NSW: Sydney Water by 2030 + SA: SA Water by 2030 + Vic: All water utilities by 2035 + WA: Water Corporation by 2035.
Governments are supporting hydrogen industry development, with highlights including:	+ common infrastructure upgrades and developments in SA's Port Bonython Hydrogen Hub, Tas Bell Bay Green Hydrogen Hub and WA's Pilbara Hydrogen Hub + direct investment by state-owned enterprises in SA's Whyalla Hydrogen Hub and Qld's Central Queensland Hydrogen project + support for integrating hydrogen into existing industries, such as NSW's Hunter Valley Hydrogen Hub that includes decarbonising ammonia manufacturing.
Governments are planning to integrate renewable energy into designated industrial zones, such as:	+ NSW's Clean Manufacturing Precinct project is developing industrial decarbonisation plans for the Hunter and Illawarra. + WA developing the Oakajee Strategic Industrial Area as a renewable hydrogen hub.
Governments are focusing on reducing and diverting waste from landfills:	+ SA achieved a 97 per cent construction and demolition waste recovery rate in 2022-23. + All states and territories support the Australian Government's National Food Waste Strategy and the Food Waste for Healthy Soils Fund.

See Appendix for all references for state and territory government actions listed above.

INDUSTRY

More to be done

States and territories have the opportunity to drive emissions reductions from their jurisdiction's industries by focusing on areas such as:

Place-based planning and action

Developing net zero industrial precincts is an opportunity to take a coordinated approach to decarbonising Australia's major industrial regions – offering cost and workforce advantages over a project-by-project approach. Regional energy system planning – to anticipate the full range of industrial areas' renewable energy needs for heat, hydrogen and electricity – could be strengthened to both decarbonise existing industries and develop entirely new green industries.

Support for green industries

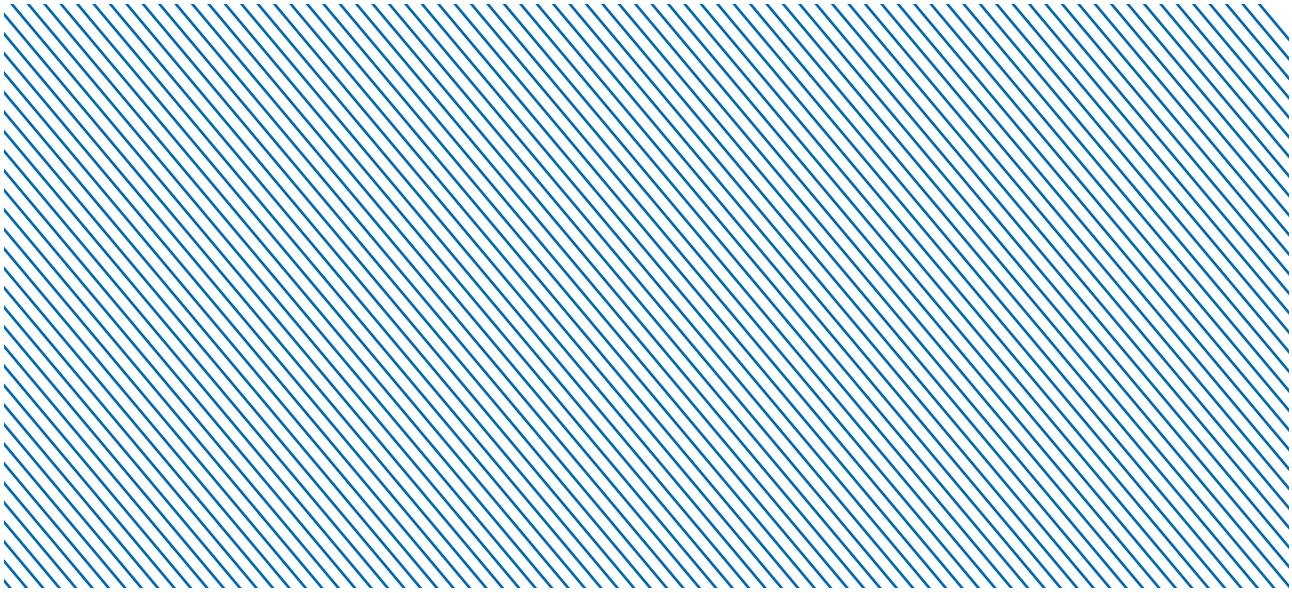
State and territory governments can help develop green industries by providing support for pilot projects. They can also increase demand for low-emissions products through procurement agreements or mandates in government-led projects.

Circular economy principles

Establishing a circular economy – where products are sustainably reused, recycled or repurposed – can reduce emissions by lowering demand for primary products and reducing landfill waste and resulting methane emissions. While some work is underway to divert waste from landfills, there are opportunities to increase Australia's scrap collection, processing and recycling facilities, promote circular business models and establish accreditation for recycled content in products.

Energy efficiency

Energy efficiency upgrades can reduce industry's energy consumption, and some states and territories have schemes to support businesses' energy efficiency projects. There is an opportunity for energy efficiency schemes to be improved so they support widespread energy savings in the sector and effectively drive emissions reductions.



CASE STUDY

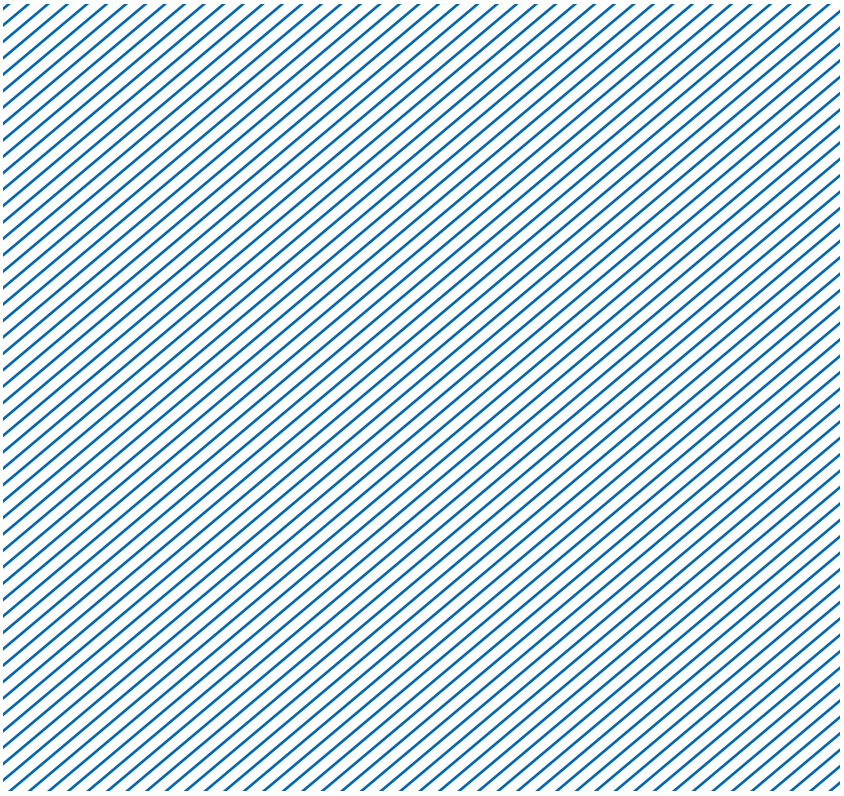
South Australia's Green Iron and Steel Strategy

In June 2024, the Government of South Australia released its Green Iron and Steel Strategy (Government of South Australia 2024). The strategy outlines three primary objectives to position South Australia as a global leader in green iron and steel products.

The first objective aims to enhance South Australia's comparative advantage by demonstrating the quality of its iron ore deposits and the economic potential for green iron production and export. The Government of South Australia will also conduct research to understand present-day challenges to scaling up the industry, including technological and workforce challenges.

The second objective is to establish the foundations for local green steel industry and support scaling renewable energy, mining and hydrogen industries. Work will initially focus on the transformation of the Whyalla steelworks to a low-carbon operation. The outcomes of a government-run Green Iron Expression of Interest Process will inform a commercial study that will explore ways to de-risk and maximise opportunities across the steelmaking value chain, including determining specialised industrial precincts. The Government of South Australia will work with stakeholders to enable multi-user corridors for infrastructure such as roads, rail, telecommunications, power and water.

The third objective is to ensure a sustainable, long-term green iron and steel industry. The Government of South Australia will continue to work with local and First Nations communities to develop partnerships and ensure shared prosperity. The Government of South Australia will also phase in procuring Australian-made green steel for infrastructure projects.

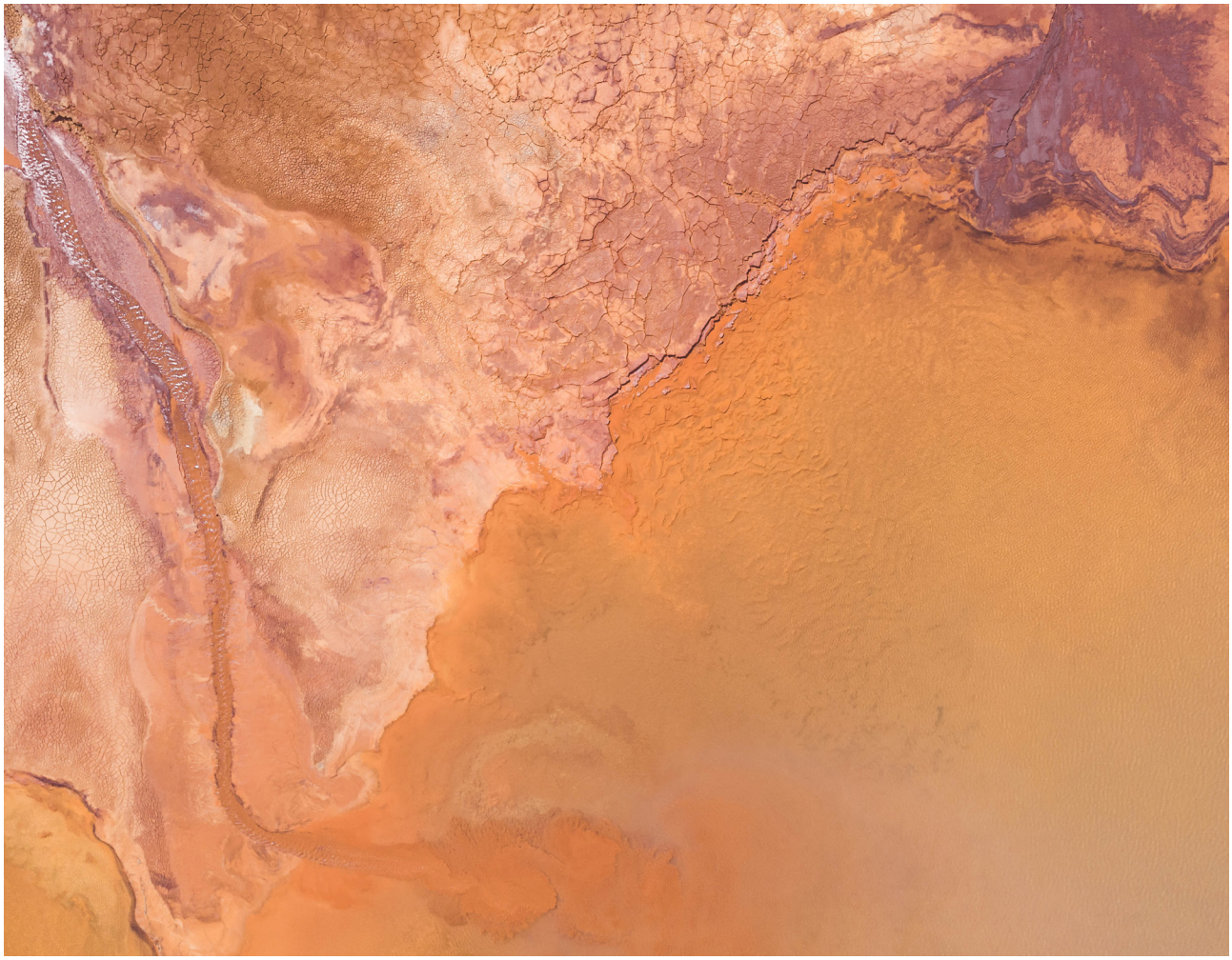


Resources

Australia's resources sector is heavily export-focused – accounting for two-thirds of the country's exported goods (Climate Change Authority 2024a). Coal and gas comprise much of these exports, and as countries reduce their emissions, demand for Australia's coal and gas will decrease. However, Australia is also the world's largest producer of iron ore, bauxite and lithium, and it has some of the world's largest copper and nickel reserves. Many of these mineral resources are essential to low-carbon technologies, presenting opportunities for Australia in the global transition to net zero emissions. If Australia transitions to environmentally and socially responsible mining of non-fossil fuel resources and increases its capabilities in downstream manufacturing, it could ensure its continued prosperity in a decarbonising global economy.

The aim

By 2050, emissions from the resources sector decline by 86–97 per cent in Climateworks' well-below-2°C and 1.5°C scenarios. This is driven by reduced export demand for coal and gas in line with the International Energy Agency's World Energy Outlook scenarios (Climateworks Centre 2023b). Non-fossil fuel subsectors are assumed to experience growth to 2050. Mine site electrification and battery-electric trucks help to replace most diesel use by around 2040 in our 1.5°C and well-below-2°C scenarios. Beyond reducing emissions, Australia's mining sector will need to meet broader environmental and social standards. For example, minimising biodiversity loss, water pollution, land clearing and ensuring community benefit sharing and informed consent for new mines.



RESOURCES

Progress so far

Governments are supporting resource companies to reduce emissions by funding low-emissions technology pilots, such as:	+ Minerals Research Institute of Western Australia's Net Zero Emissions Mining activities + WA's Carbon Innovation Grants Program, which has awarded grants to several mining and mining services initiatives.
Governments are working to minimise the impacts on local communities as some mine sites close:	+ Vic's Latrobe Valley and Gippsland Transition Plan addresses the economic and workforce transition as the region's coal powered generators and coal mines close over the coming decades, with the Latrobe Valley Regional Rehabilitation Strategy planning to rehabilitate the region's coal mines.
Governments are working to increase renewable electricity supply to mine sites:	+ Qld's CopperString 2032 project and WA's Pilbara Energy Transition Plan.
States and territories are implementing policies for the resources sector that require large projects and emitters to assess and minimise their emissions, for example:	+ NSW completed consultation on its draft Climate Change Assessment Requirements and draft Greenhouse Gas Assessment Guide for Large Emitters. + Qld's Greenhouse Gas Emissions Guideline clarifies application requirements under the Environmental Protection Act, including emissions estimation and minimisation.

See Appendix for all references for state and territory government actions listed above.

RESOURCES

More to be done

Some action to reduce resources sector emissions is occurring at the federal level and through corporate-led initiatives. There is room for state and territory governments to do more in areas such as:

An economy-wide lens on emissions management

While the Safeguard Mechanism will help drive down emissions from large emitters at the national level, there are opportunities for all subnational governments to strengthen action further and implement policies that reduce emissions from facilities not covered by the Safeguard Mechanism. This could include aligning approval processes and ongoing licence monitoring conditions with jurisdictional emissions reduction targets, associated climate policies and sector plans, when developed. Continued support for renewable energy adoption will also help reduce local demand for fossil fuels and enable the clean energy transition.

Environmental and social benchmarks

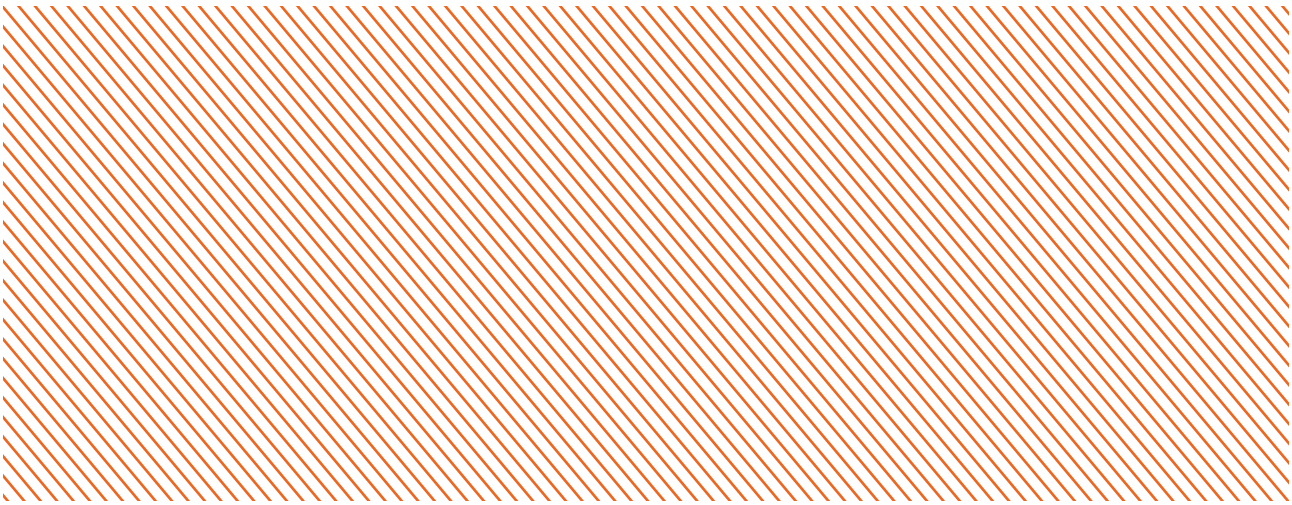
Ensuring future prosperity for Australia's resources sector means going beyond reducing resources' emissions intensity. States and territories have the opportunity to ensure companies meet high environmental and social standards, for example, by fostering meaningful community engagement and benefit sharing, planning community transitions and integrating strong sustainability benchmarks in planning and approval processes.

Mine site electrification and renewable energy use

Replacing fossil fuels with renewable electricity is a significant opportunity to reduce the resource sector's emissions. State and territory governments could further increase renewable energy generation for mine sites, including remote off-grid sites.

Emissions reduction in haulage

A significant portion of fossil fuel use on mines is for heavy haulage. State and territory governments could support companies' transition to battery electric trucks by funding pilot studies and charging infrastructure developments.



CASE STUDY

Queensland's CopperString 2032 project

The CopperString 2032 project is an 840 km high-voltage transmission line that will connect Queensland's North West Minerals Province to the national electricity grid and the North Queensland Renewable Energy Zone (Queensland Government 2024b). The project will deliver reliable, affordable and renewable power to the region's critical mineral projects, which currently rely on gas-fired electricity generation.

The Queensland Government is committed to the $6.2 billion project, which is expected to support 800 direct jobs over six years and unlock more than $500 billion in new critical minerals. CopperString is on track to be completed by 2029.

CASE STUDY

Western Australia's Pilbara Roundtable and Energy Transition Plan

The Pilbara is acknowledged as a major global hub for mineral and energy resources and contributes nearly 20 per cent of Western Australia's economic output. The region also accounts for more than 40 per cent of the state's emissions, primarily from industrial producers (Government of Western Australia 2024a). Decarbonising the Pilbara is crucial for Western Australia's long-term prosperity.

The Pilbara Energy Transition Plan aims to accelerate a rapid, orderly and equitable transition to renewable energy. Under the plan, more common-use energy infrastructure will be developed to prevent unnecessary duplication, enable access to diverse renewable energy sources and support energy security and reliability. The plan seeks to drive private investment through Western Australia's allocation from Rewiring the Nation and foster collaboration with First Nations people and local communities (Government of Western Australia 2024a).

The Pilbara Roundtable, which includes First Nations people, industry and government, is working to progress the transition. It will oversee and prioritise energy infrastructure and identify necessary regulatory changes (Government of Western Australia 2024b). As an initial step, the Government of Western Australia has identified four priority corridors in the Pilbara for new common-use transmission infrastructure developments (Government of Western Australia n.d.).

Agriculture and land

In 2023, emissions from the agriculture sector reached a 17-year high (influenced by the effects of La Niña – an increase in rain leading to greater livestock production and resulting emissions) and are projected to decline by only 3 per cent by 2030 (DCCEEW 2023). Methane from livestock and nitrous oxide are the main greenhouse gases produced by the agriculture sector.

For nearly a decade, emissions from Australia's land use, land use change and forestry have been negative (DCCEEW 2024b). The balance between deforestation and other vegetation clearance and regrowth and planting is complex and has varied by year and by state as policies have changed (ABARES 2023). Substantially increasing nature-based carbon dioxide removals is critical for reaching climate goals – there is no route to net zero without nature.

The aim

In Climateworks' well-below-2°C and 1.5°C scenarios, direct emissions from agriculture decline by 18–19 per cent by 2050, with business-as-usual demand scenarios. Methane emissions from livestock can be reduced with feed supplements. Nitrification inhibitors and slow-release fertilisers can reduce nitrous oxide emissions. There are also opportunities to reduce emissions by switching to lower emissions agriculture products and electrifying agricultural machinery. In Climateworks' scenarios, 80–96 per cent of agriculture's energy use is electricity in 2050, compared to just 6 per cent today.

By 2050, in the 1.5°C scenario, five times more carbon dioxide is removed from the atmosphere compared to what Australia's land sector currently absorbs each year. Changes in agricultural practices can help store more carbon in soil and vegetation. Ecosystem restoration and protection are also needed to maintain and expand carbon sinks. Nature-based solutions can provide climate, biodiversity and resilience benefits.

BOX 1:

Progress so far

Governments are implementing education schemes on how to reduce agriculture emissions, such as:	+ NSW's On-Farm Carbon Advice program + Qld Business Energy Saving and Transformation—Agriculture program + Vic's On-Farm Emissions Action Plan Pilot.
Governments are supporting nature-based sequestration through programs, such as:	+ NSW's High Impact Partnerships grants and Carbon on Country program + Qld's Land Restoration Fund + SA's Trees on Farms Initiative + Vic's Carbon Farming Program + WA's Carbon Farming and Land Restoration Program.
Governments are supporting the transition to lower-emissions agriculture through initiatives, such as:	+ Qld's Rural and Industry Development Authority Sustainability Loan program, which includes support for renewable energy and emissions reduction initiatives. + NSW's Net Zero Manufacturing Initiative – Low Carbon Product Manufacturing, which includes support for low carbon agricultural inputs.
Governments are funding research and trials to reduce methane emissions from livestock, such as:	+ Tas Low emissions livestock grant program + Qld's participation in the Greener Cattle Initiative's Australian hub.

See Appendix for all references for state and territory government actions listed above.

AGRICULTURE AND LAND

More to be done

State and territory governments have opportunities to drive down agriculture emissions and ensure land management practices prioritise biodiversity and resilient carbon sinks. Areas for further action include:

Support for low-emissions agricultural practices and products

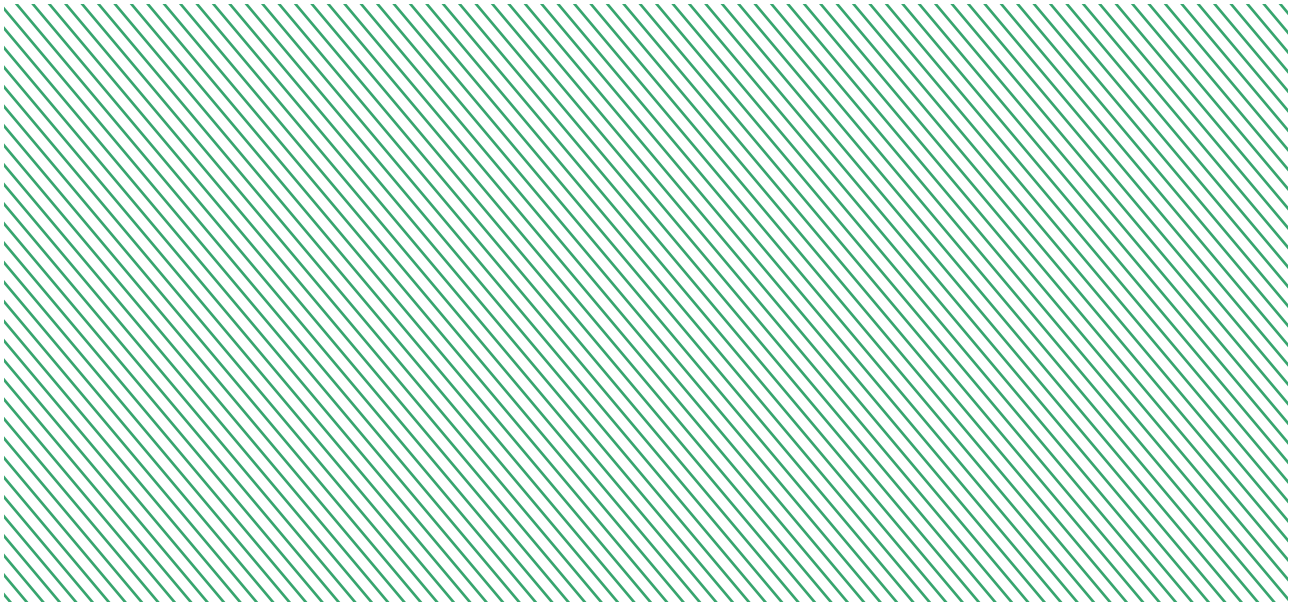
All state and territory governments can further support research, development and implementation of interventions to reduce methane and nitrous oxide, sustainable and regenerative farming practices, electric agricultural machinery, and renewable energy uptake on farms. State and territory governments could also support a shift to lower emissions intensity products (e.g. alternative proteins), noting that significantly reducing emissions from ruminant livestock will be limited, particularly in some grazing systems.

Nature-based sequestration at scale

Most states and territories have programs focused on land restoration or carbon farming. However, these could be strengthened to ensure the land sector can sequester the amount of carbon dioxide Climateworks' decarbonisation scenarios show could be needed by 2050. Such efforts would protect existing ecosystems and restrict deforestation and native forest logging.

Optimising land use

State and territory governments could promote a more integrated approach to land use planning, which aims to make the best use of land for multiple objectives. Cross-sectoral planning is needed to consider the interactions between efforts to increase carbon removals, meet biodiversity targets, manage water, achieve agricultural production goals and increase renewable energy production. Policy and planning that reflects interactions between these objectives and that includes community consultation and prior informed consent could help ensure the long-term sustainability of Australia's land use. Spatial modelling is important to inform land use and management decisions to support economic, environmental and social objectives.



CASE STUDY

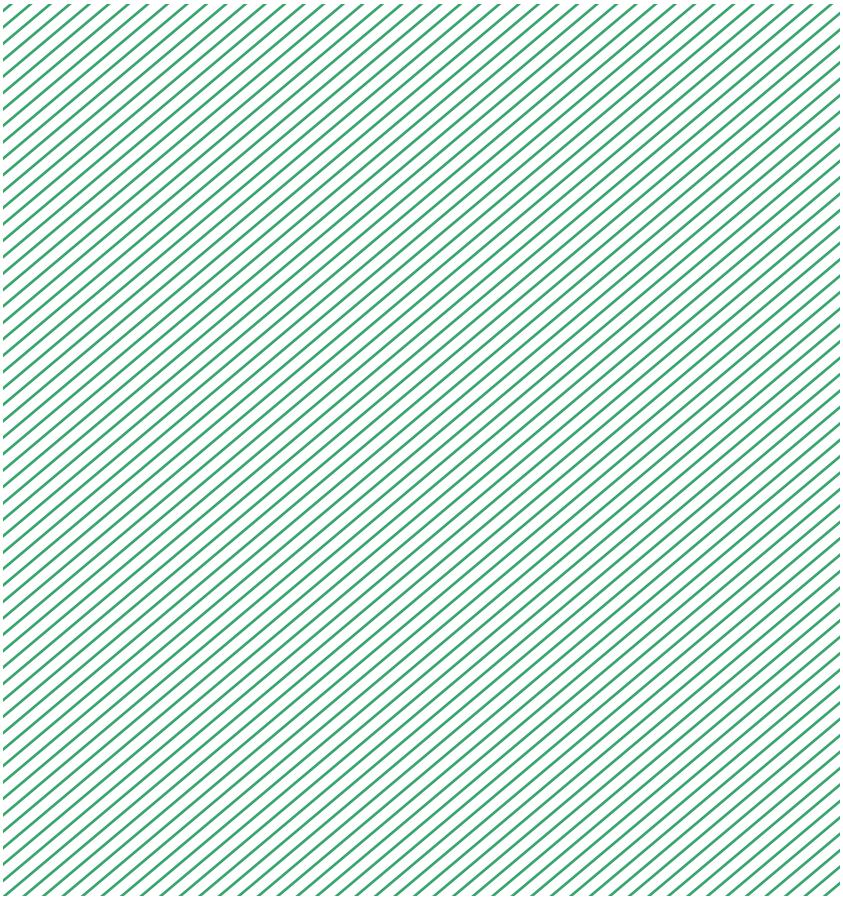
Tasmania trials feed supplements to reduce methane emissions from livestock

Research commissioned by the Tasmanian Government shows that reducing methane from livestock is the state's biggest opportunity to reduce its emissions, as livestock currently accounts for one-quarter of Tasmania's total greenhouse gas emissions (Advisory 2021).

To capitalise on this opportunity, the Tasmanian Government has awarded a $4 million Low Emissions Livestock Grant to TasFarmers. The funding will support a commercial-scale trial of algae-based feed supplements in beef and dairy cattle and demonstrate the feasibility and benefits of these interventions to encourage broader uptake (Tasmanian Government n.d.).

TasFarmers will work with the Tasmanian Institute of Agriculture, Fonterra, Annandale Dairy Farm, Sea Forest and AEON as key partners. The TasFarmers project will introduce Sea Forest's Asparagopsis seaweed feed supplements to approximately 24,000 head of livestock to reduce an estimated 16,350 tCO_2e over the next three years – equal to removing 7,000 cars from Tasmania's roads (Tasmanian Government 2024).

The trial aims to demonstrate the feed supplement's emissions reduction potential, commercial viability and benefits to the agriculture sector. The project will also include education and awareness activities, as well as tools and resources for livestock producers to support them in adopting low-emissions technologies.



Maximising impact through collaboration and integrating climate into government processes

This report highlights key policies driving emissions reductions in Australia's states and territories.

It shows that states and territories' ambition and action on climate change is growing, although the path is not always linear. All states and territories have a target of net zero emissions by 2050 or earlier, and most have interim targets. Almost all states and territories have renewable energy targets and plans to electrify their buildings and transport sectors.

Together, state and territory ambition adds up to a national equivalent target aligned to limiting warming to well below 2°C. Greater ambition is needed to reach the preferred 1.5°C goal.

Subnational governments cannot do this work alone. Australia's sectors – and their emissions – traverse state and territory boundaries, and collaboration between the Australian Government and state and territory governments can maximise emissions reductions.

State and territory governments are collaborating with the Australian Government through intergovernmental forums, bilateral agreements and intergovernmental programs and policy development. For instance, the Energy and Climate Change Ministerial Council and the Infrastructure and Transport Ministers' Meetings provide a forum for collaborating and decision-making on priorities of national importance. These forums have led to important developments such as the Embodied Carbon Measurement for Infrastructure guidance, which provides a consistent approach for measuring embodied carbon in transport infrastructure across all Australian jurisdictions (DITRDCA n.d.). South Australia, Western Australia and the Australian Capital Territory have signed bilateral Renewable Energy Transformation Agreements with the Australian Government to deliver renewable energy and storage in each state (DCCEEW 2024f). Examples of intergovernmental programs and policy development include:

+ Rewiring the Nation
+ National Renewable Energy Supply Chain Action Plan
+ National Energy Transformation Partnership
+ Critical Minerals National Productivity Initiative
+ Social Housing Energy Performance Initiative.

There are fewer examples of bilateral collaboration between states and territories. Victoria and New South Wales are collaborating to develop transmission lines that connect renewable energy zones in each state (AEMO n.d.). They are also collaborating to develop a hydrogen refuelling network along the Hume Highway and have signed a Memorandum of Understanding with the Queensland Government to share what lessons they learn from the project (DEECA 2023). Victoria and Tasmania are collaborating on the Marinus Link project, and South Australia and New South Wales are working together on Project EnergyConnect (Marinus Link n.d., Project EnergyConnect n.d.). There is an opportunity to increase collaboration between states and territories to drive deeper emissions reductions.

The window for keeping global temperature rise to 1.5°C is narrowing. For Australia's part, current state and territory targets, collectively, do not meet the ambition required. The ability of policies to meet those targets also varies from one jurisdiction to the next and from sector to sector. Substantial policy progress has been made in some sectors – transport, buildings and energy. Opportunities exist in all sectors to strengthen climate action and ambition, in particular in agriculture and land, resources, and industry.

Integrating climate goals into central government processes at the national and subnational levels can ensure climate is at the heart of decision-making. Highlights of recent government action to integrate climate include:

+ South Australia incorporating climate into its planning policy.
+ Queensland integrating sustainability considerations into its decision-making processes and managing sustainability risks and opportunities through its Sustainability Report.
+ Green procurement guidelines introduced in Victoria, New South Wales, the Australian Capital Territory, South Australia, Western Australia, Queensland and Tasmania.
+ The Australian Capital Territory introducing a social cost of carbon for consideration in government decisions and New South Wales developing a carbon emissions value for cost-benefit analyses.
+ Victoria's Climate-related Risk Disclosure Statement, which sets out government actions to manage and monitor climate risks beyond emissions reductions for the state and government operations.

States and territories have made significant strides to reduce emissions, reflecting a growing recognition of the urgent need to address climate change and a desire to realise jurisdictional advantages. The ambition and leadership demonstrated by states and territories are pivotal, providing a solid foundation for further action and innovation. Each state and territory brings unique strengths and perspectives, fostering a diverse approach to tackling emissions and promoting sustainability.

To build on this progress, it is essential to enhance collaboration across all levels of government – federal, state and local. By working together more effectively, these entities can share resources, knowledge and best practices, ensuring that successful initiatives can be replicated and scaled. This collaborative spirit can drive the development of comprehensive policies that meet immediate climate goals and lay the groundwork for long-term sustainability.

Another crucial step is integrating climate goals into state and territory governments' processes. By integrating environmental considerations into planning, budgeting and decision-making, governments can ensure that climate action is a priority. This holistic approach can ensure more resilient infrastructure, sustainable urban planning and innovative energy solutions that benefit both the environment and local communities.

The path forward requires a concerted effort to strengthen ambition and collaboration and embed climate goals in governance. In doing so, Australia can maximise its emissions reductions, drive sustainable development, realise its comparative advantage and take a leading role in the global effort to combat climate change.

State and territory government actions referenced in this report

The following table lists the state and territory actions referenced in this report. This is not an exhaustive list of all state and territory climate action. In some instances, initiatives discussed in the report are elements of state and territory multi-sector climate change strategies. The links to these actions, included below, will provide further information on those initiatives.

CLIMATE CHANGE LEGISLATION AND STRATEGIES

	LEGISLATION, POLICY, PROGRAM, INITIATIVE OR ANNOUNCEMENT
Federal	Climate Change Act 2022
Australian Capital Territory	Climate Change and Greenhouse Gas Reduction Act 2010
New South Wales	The Climate Change (Net Zero Future) Act 2023
Northern Territory	Northern Territory Climate Change Response: Towards 2050
Queensland	Clean Economy Jobs Act 2024
South Australia	Government action on climate change Climate Change and Greenhouse Emissions Reduction Act 2007 Climate Change and Greenhouse Emissions Reduction (Miscellaneous) Amendment Bill 2024
Tasmania	Climate Change (State Action) Act 2008
Victoria	Climate Change Act 2017 Climate Change and Energy Legislation Amendment (Renewable Energy and Storage Targets) Act 2024
Western Australia	Western Australian Climate Policy Climate Change Bill 2023

ELECTRICITY

Multi-jurisdictional	AEMO Data Dashboard Australian Energy Update 2024
Australian Capital Territory	Climate Change and Greenhouse Gas Reduction Act 2010 Energy Efficiency Improvement Scheme Renewable Energy Transformation Agreement
New South Wales	Capacity Investment Scheme Electricity Infrastructure Roadmap Energy Savings Scheme NSW Network Infrastructure Strategy Renewable Energy Zones
Northern Territory	Northern Territory Climate Change Response: Towards 2050
Queensland	Energy (Renewable Transformation and Jobs) Act 2024 Queensland Renewable Energy Zone Roadmap Queensland Energy and Jobs Plan
South Australia	Capacity Investment Scheme Climate Change and Greenhouse Emissions Reduction (Miscellaneous) Amendment Bill 2024 Renewable Energy Transformation Agreement Retailer Energy Productivity Scheme
Tasmania	Energy Co-ordination and Planning Act 1995
Victoria	Capacity Investment Scheme Renewable Energy (Jobs and Investment) Act 2017 Renewable energy and energy storage targets Renewable Energy Zones Summary of Transmission Infrastructure Victorian Energy Efficiency Target Act 2007
Western Australia	Collie Transition Package Renewable Energy Transformation Agreement SWIS Demand Assessment

TRANSPORT

Australian Capital Territory	ACT's Zero Emissions Vehicles Strategy 2022–30 Incentives for low and zero emissions vehicles Light Rail Stage 2a: City to Commonwealth Park Public EV Charging Infrastructure Fund Zero-Emission Transition Plan For Transport Canberra 2024 Refresh
New South Wales	NSW EV fast charging grants NSW Electric Vehicle Strategy Sydney Metro Towards Net Zero Emissions Freight Policy Zero Emissions Buses
Northern Territory	Registration and stamp duty concessions for electric vehicles
Queensland	Cross River Rail Queensland's Electric Super Highway Vehicle registration duty savings in Queensland Zero Emission Bus Program Queensland's Zero Emission Vehicle Strategy
South Australia	Incentives for electric vehicles
Victoria	Hybrid or electric vehicle registration discounts Metro Tunnel Transport sector emissions reduction pledge Victoria's Zero Emissions Vehicle Roadmap
Western Australia	Active Transport Infrastructure Electric Bus Program METRONET WA EV Network Zero Emission Vehicle (ZEV) Rebate

BUILDINGS

Multi-jurisdictional	Australian Energy Update 2024 National Construction Code 2022 Small-scale installation postcode data Social housing energy performance
Australian Capital Territory	Energy Efficiency Improvement Scheme Minimum energy efficiency standards for rental homes Minimum standards for rental properties and occupancy law reform Preventing new gas network connections Sustainable Buildings Pathway Sustainable Household Scheme The Integrated Energy Plan
New South Wales	Energy Savings Scheme
South Australia	Retailer Energy Productivity Scheme
Tasmania	Tasmania's Energy Saver Loan Scheme
Victoria	Minimum Standards for Rental Properties and Rooming Houses SEC Electric Home Planner Victorian Energy Upgrades program Victoria's Gas Substitution Roadmap
Western Australia	Energy Ahead Esperance Electrification Project

INDUSTRY

Multi-jurisdictional	National Food Waste Strategy Food Waste for Healthy Soils Fund
New South Wales	Energy Savings Scheme Industrial decarbonisation plans for the Hunter and Illawarra High emitting industries initiative Hydrogen hubs in NSW Sydney Water: Our Path To Net Carbon Zero And Beyond
Queensland	Hydrogen projects in Queensland Manufacturing Energy Efficiency Grant Program Manufacturing Benchmark Program Queensland manufacturing hubs
South Australia	Circular Economy Resource Recovery Report 2022–23 Green Iron and Steel Strategy Hydrogen Jobs Plan power plant project Port Bonython Hydrogen Hub Retailer Energy Productivity Scheme SAWater – Reaching Net Zero Carbon
Tasmania	Tasmanian Green Hydrogen Hub Project
Victoria	A net-zero emissions water sector by 2035 Victorian Energy Upgrades Program
Western Australia	Pilbara Hydrogen Hub Western Australia's Strategic Industrial Areas Water Corporation net zero targets

RESOURCES

New South Wales	Draft Climate Change Assessment Requirements and Guide
Queensland	CopperString 2032 Environmental Protection Act 1994: Greenhouse Gas Emissions Guideline
Victoria	Gippsland 2035: Latrobe Valley and Gippsland Transition Plan Latrobe Valley Regional Rehabilitation Strategy
Western Australia	Carbon Innovation Grants Program MRIWA's Net Zero Emissions Mining Pilbara Energy Transition Plan Pilbara Round Table

AGRICULTURE AND LAND

New South Wales	Carbon on Country partnerships High Impact Partnerships Low Carbon Product Manufacturing On-Farm Carbon Advice Project
Queensland	Land Restoration Fund Queensland Business Energy Saving and Transformation—Agriculture Queensland Rural and Industry Development Authority Sustainability Loan Greener Cattle Initiative
South Australia	Trees on Farms Initiative
Tasmania	Low emissions livestock grant program
Victoria	On-Farm Emissions Action Plan Pilot Victorian Carbon Farming Program
Western Australia	Western Australian Carbon Farming and Land Restoration Program

MAXIMISING IMPACT THROUGH COLLABORATION AND INTEGRATING CLIMATE INTO GOVERNMENT PROCESSES

Multi-jurisdictional	Critical Minerals National Productivity Initiative Embodied Carbon Measurement for Infrastructure Project EnergyConnect Hume Hydrogen Highway Marinus Link National Renewable Energy Supply Chain Action Plan National Energy Transformation Partnership Rewiring the Nation Social Housing Energy Performance Initiative VNI West (Victoria to New South Wales Interconnector West)
Australian Capital Territory	A Social Cost of Carbon for the ACT The Procurement Values Guide
New South Wales	Carbon value in cost benefit analysis Procurement Policy Framework
Queensland	Queensland Procurement Policy 2023 Queensland Sustainability Report
South Australia	Green Procurement Guideline Planning for Climate Change
Tasmania	Procurement Better Practice Guidelines
Victoria	Climate-related Risk Disclosure Statement Social Procurement Framework
Western Australia	Environmental Procurement Guide

References

ABARES (Australian Bureau of Agricultural and Resource Economics) (2023) *Australia's State of Forests Report: Indicator 1.1a: Area of forest by forest type and tenure,* https://www.agriculture.gov.au/abares/forestsaustralia/sofr/criterion-1/indicator-1.1a.iv-forest-area-change.

ACT Government (2022) *ACT's Zero Emissions Vehicles Strategy 2022 – 30,* https://www.climatechoices.act.gov.au/policy-programs/acts-zero-emissions-vehicles-strategy.

—— (2023) *More electric vehicles than ever on ACT roads,* https://www.cmtedd.act.gov.au/open_government/inform/act_government_media_releases/rattenbury/2023/more-electric-vehicles-than-ever-on-act-roads, accessed 2 October 2024.

—— (2024a) *Sustainable Buildings Pathway,* https://www.planning.act.gov.au/professionals/building-regulatory-system/act-sustainable-buildings-pathway.

—— (2024b) *Sustainable Household Scheme Dashboard,* https://www.climatechoices.act.gov.au/policy-programs/sustainable-household-scheme-dashboard, accessed 16 September 2024.

—— (n.d.) *Sustainable Household Scheme,* https://www.climatechoices.act.gov.au/policy-programs/sustainable-household-scheme, accessed 16 September 2024a.

—— (n.d.) Canberra's plan to transition, https://ecc.coordinate.com.au/, accessed 1 October 2024b.

—— (n.d.) *Canberra's Electrification Pathway*, https://www.climatechoices.act.gov.au/energy/canberras-electrification-pathway, accessed 1 October 2024c.

Adisa L (6 December 2023) 'The extraordinary story of rooftop solar in Australia's National Electricity Market', PV Magazine, https://www.pv-magazine.com/2023/12/06/the-extraordinary-story-of-rooftop-solar-in-australias-national-electricity-market/.

Advisory P (2021) *2021 Update of Tasmania's Emissions Pathway Review*, https://www.recfit.tas.gov.au/__data/assets/pdf_file/0009/492093/Tasmanian_Emissions_Pathway_Review_-_Technical_Report.pdf.

AEMO (Australian Energy Market Operator) (n.d.) *VNI West (Victoria to New South Wales Interconnector West)*, https://aemo.com.au/en/initiatives/major-programs/vni-west, accessed 30 September 2024.

—— (2024) *Data dashboard NEM*, https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/data-nem/data-dashboard-nem, accessed 5 September 2024.

Australian Government (2023) *Climate Change Act 2022, Federal Register of Legislation*, https://www.legislation.gov.au/C2022A00037/latest/text, accessed 2 September 2024.

Climate Change Authority (2024a) *Sector Pathways Review,* https://www.climatechangeauthority.gov.au/sector-pathways-review, accessed 6 September 2024.

—— (2024b) *Sector Pathways Review: Appendices*, https://www.climatechangeauthority.gov.au/sector-pathways-review.

Climate Change Bill (2023), https://www.parliament.wa.gov.au/parliament/bills.nsf/BillProgressPopup?openForm&ParentUNID=7A17F706ED198C4148258A750008D497.

Climateworks Centre (2022) Government climate action: Leading policies and programs in Australia, https://www.climateworkscentre.org/resource/government-climate-action-leading-policies-and-programs-in-australia-2022/.

—— (2023a) *Climateworks Centre decarbonisation scenarios 2023: Australia can still meet the Paris Agreement*, https://www.climateworkscentre.org/resource/climateworks-centre-decarbonisation-scenarios-2023-australia-can-still-meet-the-paris-agreement/, accessed 11 September 2024.

—— (2023b) *Climateworks Centre decarbonisation scenarios 2023 AusTIMES modelling, assumptions and methodology,* https://www.climateworkscentre.org/wp-content/uploads/2023/10/Climateworks-Centre-decarbonisation-scenarios-2023-Assumptions-and-Methodology-Report-November-2023.pdf.

—— (2023c) *Climate-ready homes: Building the case for a renovation wave in Australia*, https://www.climateworkscentre.org/resource/climate-ready-homes-building-the-case-for-a-renovation-wave-in-australia/.

—— (2023d) *Renovation Pathways: Defining zero carbon homes for a climate resilient future*, https://www.climateworkscentre.org/resource/renovation-pathways-defining-zero-carbon-homes-for-a-climate-resilient-future/.

—— (2024a) *Decarbonising Australia's transport sector: Diverse solutions for a credible emissions reduction plan*, https://www.climateworkscentre.org/resource/decarbonising-australias-transport-sector-diverse-solutions-for-a-credible-emissions-reduction-plan/.

—— (2024b) *Enabling Australia's home renovation wave*, https://www.climateworkscentre.org/resource/enabling-australias-home-renovation-wave/.

Climateworks Centre and Climate-KIC Australia (2023) *Pathways to industrial decarbonisation: Positioning Australian industry to prosper in a net zero global economy*, https://www.climateworkscentre.org/resource/pathways-to-industrial-decarbonisation-positioning-australian-industry-to-prosper-in-a-net-zero-global-economy/

CSIRO (2024) *GenCost 2023-24 report*, https://www.csiro.au/en/news/all/news/2024/may/csiro-releases-2023-24-gencost-report.

DCCEEW (Department of Climate Change, Energy, the Environment and Water) (2023) *Australia's emissions projections 2023*, Australian Government, https://www.dcceew.gov.au/climate-change/publications/australias-emissions-projections-2023.

—— (2024a) *International climate action*, https://www.dcceew.gov.au/climate-change/international-climate-action, accessed 6 September 2024.

—— (2024b) *Australia's National Greenhouse Accounts*, https://greenhouseaccounts.climatechange.gov.au/, accessed 4 November 2024.

—— (2024c) 'Australian Energy Statistics, Table O Electricity generation by fuel type 2022-23 and 2023', https://www.energy.gov.au/publications/australian-energy-statistics-table-o-electricity-generation-fuel-type-2022-23-and-2023, accessed 29 October 2024.

—— (2024d) NSW Government grants ACEREZ transmission operator's licence for Central-West Orana REZ, https://www.energyco.nsw.gov.au/news/nsw-government-grants-acerez-transmission-operators-licence-central-west-orana-rez, accessed 15 November 2024.

—— (2024e) *Home Energy Ratings Disclosure Framework – Version 1*, https://www.energy.gov.au/energy-and-climate-change-ministerial-council/energy-ministers-publications/home-energy-ratings-disclosure-framework-version-1, accessed 30 October 2024.

—— (2024f) *Boosting renewables in Western Australia and South Australia*, https://www.dcceew.gov.au/about/news/boosting-renewables-western-australia-south-australia, accessed 30 September 2024.

—— (2024g) *Net Zero*, https://www.dcceew.gov.au/climate-change/emissions-reduction/net-zero, accessed 6 September 2024.

—— (2024h) 'Securing a reliable renewable energy future for Australia and the ACT', https://www.dcceew.gov.au/about/news/securing-reliable-renewable-energy-future-australia-and-act

—— (n.d.) *Buildings*, https://www.dcceew.gov.au/energy/energy-efficiency/buildings, accessed 4 September 2024.

DEECA Victoria State (Department of Energy, Environment and Climate Action) (2023) *Hume Hydrogen Highway*, https://www.energy.vic.gov.au/grants/hume-hydrogen-highway, accessed 30 September 2024.

DITRDCA (Department of Infrastructure, Transport, Regional Development, Communications and the Arts) (n.d.) *Working with states and territories to decarbonise infrastructure and transport*, https://www.infrastructure.gov.au/infrastructure-transport-vehicles/net-zero/working-states-and-territories-decarbonise-infrastructure-and-transport, accessed 30 September 2024.

Government of South Australia (2024) *Green iron and steel strategy*, https://www.energymining.sa.gov.au/industry/green-iron-and-steel/green-iron-and-steel-strategy.

Government of Western Australia (2023) *SWIS Demand Assessment 2023 to 2042*, https://www.wa.gov.au/government/document-collections/swis-demand-assessment.

—— (2024a) *Pilbara Energy Transition Plan*, https://www.wa.gov.au/organisation/energy-policy-wa/pilbara-energy-transition-plan, accessed 2 October 2024.

—— (2024b) *Pilbara Roundtable*, https://www.wa.gov.au/government/document-collections/pilbara-roundtable, accessed 2 October 2024.

—— (2024c) *Collie Just Transition*, https://www.wa.gov.au/organisation/department-of-the-premier-and-cabinet/collie-just-transition, accessed 30 October 2024.

—— (n.d.) *Designated Priority Corridors*, https://www.wa.gov.au/organisation/energy-policy-wa/designated-priority-corridors, accessed 15 November 2024.

Marinus Link (n.d.), https://www.marinuslink.com.au/, accessed 31 October 2024.

NSW DPIE (Department of Planning, Industry and Environment) (2020) *NSW Electricity Infrastructure Roadmap: Building an Energy Superpower*, https://www.energy.nsw.gov.au/sites/default/files/2022-08/NSW%20Electricity%20Infrastructure%20Roadmap%20-%20Detailed%20Report.pdf.

NSW Government (n.d.) *What is a Renewable Energy Zone?*, https://www.energyco.nsw.gov.au/renewable-energy-zones/what-renewable-energy-zone, accessed 17 September 2024a.

—— (n.d.) *Central-West Orana Transmission Project*, https://www.energyco.nsw.gov.au/cwo, accessed 17 September 2024b.

Percapita (2024) *Charged Up: Strategies for Addressing the Skill Shortage in Electrical Trades for the Clean Energy Transition*, https://percapita.org.au/our_work/charged-up/.

PoweringWA (n.d.) Western Australian Government, https://www.wa.gov.au/organisation/energy-policy-wa/poweringwa, accessed 24 September 2024.

Project EnergyConnect (n.d.), https://www.projectenergyconnect.com.au/, accessed 31 October 2024.

Queensland Government (2022) *Queensland Energy and Jobs Plan*, https://www.energyandclimate.qld.gov.au/energy/energy-jobs-plan/about-plan.

—— (2023) *Queensland Energy and Jobs Plan 2023 Update*, https://www.energyandclimate.qld.gov.au/energy/energy-jobs-plan/about-plan.

—— (2024a) *Clean Economy Jobs Act 2024, Queensland Legislation*, https://www.legislation.qld.gov.au/view/html/asmade/act-2024-016, accessed 6 September 2024.

—— (2024b) *What is CopperString 2032 and why is it important for Queensland's renewable energy future?*, https://www.statedevelopment.qld.gov.au/news/what-is-copperstring-2032-and-why-is-it-important-for-queenslands-renewable-energy-future, accessed 17 September 2024.

ReCFIT (2024) *Emissions Reduction and Resilience Plans*, https://www.recfit.tas.gov.au/policies_strategies_plans/emissions_reduction, accessed 10 October 2024.

SEC (n.d.) *SEC electric home planner*, https://www.secvictoria.com.au/powerup, accessed 4 November 2024.

SLOCAT (2023) *Global Status Report on Transport, Climate and Sustainability – 3rd edition*, https://tcc-gsr.com/wp-content/uploads/2023/06/1-Transport-Pathways-to-Reach-Global-Climate-and-Sustainability-Goals.pdf

Tasmanian Government (2024) *Tasmanian cattle feed investment to cut emissions*, https://www.premier.tas.gov.au/latest-news/2024/may/tasmanian-cattle-feed-investment-to-cut-emissions, accessed 2 October 2024.

—— (n.d.) *Low emissions livestock grant program*, https://www.recfit.tas.gov.au/grants_programs/low_emissions_livestock, accessed 2 October 2024.

Transport for NSW (2023) *Towards Net Zero Emissions Freight Policy*, https://www.transport.nsw.gov.au/operations/freight-hub/towards-net-zero-emissions-freight-policy.

UNFCCC (United Nations Framework Convention on Climate Change) (2015) 'Paris Agreement', https://unfccc.int/sites/default/files/english_paris_agreement.pdf.

—— (2023) Global renewables and energy efficiency pledge, https://www.cop28.com/en/global-renewables-and-energy-efficiency-pledge, accessed 13 November 2024.

Victoria State Government (2017) *Climate Change Act 2017*, https://www.climatechange.vic.gov.au/legislation/climate-change-act-2017.

—— (2022) *Gas Substitution Roadmap*, https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap.

—— (2024) *Victoria's Gas Substitution Roadmap*, https://www.planning.vic.gov.au/guides-and-resources/strategies-and-initiatives/victorias-gas-substitution-roadmap, accessed 2 October 2024.

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