

## **SEIZE THE DECADE:**

How we empower Australian communities and cut climate pollution 75% by 2030

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# Key findings

## 1

**Australia's shift to renewable energy is well underway – visible on our rooftops, inside our homes, across our neighbourhoods and businesses – with benefits for many communities.**

- › Renewable energy from sources like the sun and wind allows us to power our lives and economy without producing climate pollution. More than 40% of the electricity in our main national grid is already being met by clean sources of power.
- › More than three million Australian families have already taken control of their power bills, and put solar panels on their own rooftops.
- › Governments, businesses and communities are putting different solutions in place to keep cutting climate pollution; from solar and wind farms, to electric vehicles, pumped hydro, electrification and batteries both small and large.
- › This cuts climate pollution and also directly benefits all families and businesses by driving down the costs of living and doing business, creating new good jobs and investment, and providing more certainty and control over bills and running costs.

## 2

**Decisions made throughout the 2020s are shaping the kind of world we will live in for many decades. Moving too slowly, or incrementally, could trigger abrupt and irreversible climate change that overwhelms our society.**

- › Digging up and burning coal, oil and gas is blanketing Earth in heat-trapping pollution that supercharges all extreme weather.
- › Australians are weathering climate whiplash, as communities are hurled from flooding rains to heatwaves and fierce fire conditions, and back again. This disrupts all of our lives and is rapidly eroding our quality of life as the cost of essentials like food and electricity rise, and insurance becomes unaffordable for many.
- › The only solution is to reduce climate pollution as quickly as possible; with the lion's share happening by 2030.
- › Failing to take necessary action now means allowing the climate crisis to accelerate. As the world becomes less and less hospitable these decisions will haunt generations to come.

## 3

Projections show that current plans and policies already put us on track to achieve half the cuts to climate pollution we need by 2030. The Climate Council has developed a clear plan for how more Australians can benefit from taking further, necessary steps.

- › Our analysis shows by doing what's possible now across every sector, we can cut climate pollution three times faster each year to 2030 than existing national plans. This report lays out a clear pathway for how this can be done, who benefits, and what it will take.
- › Australia is on track to reduce national emissions by 42% by 2030. This has improved under the current Government by about 12%. We are making progress, but we are moving too slow.
- › Climate Council analysis shows that Australia must strive for a 75% emissions cut below 2005 levels by 2030, and net zero emissions by 2035 so we can help hold global warming at the safest levels now possible.
- › This plan centres solutions that reduce or remove climate pollution by permanently phasing out coal, oil and gas. It minimises the use of land-based carbon offsets and carbon capture and storage, and does not incorporate unviable proposals like nuclear energy, or hydrogen being used in our homes.

## 4

Australia can seize the decade by capitalising on our world-beating resources in renewable energy, and deep industry and manufacturing know-how. We can scale up clean ways of powering ourselves, making things, moving around and building our communities.

- › The job and economic opportunities for Australia abound, as countries the world over cut climate pollution. Worldwide, renewable energy installations hit a record high in 2023 of nearly 510 GWs — the 22<sup>nd</sup> record-setting year in a row.
- › With a modern industrial and manufacturing base that's fit for the 21<sup>st</sup> century, we can set up our kids to thrive with plenty of good, ongoing jobs in renewable energy and clean industries.
- › Australians are in a cost-of-living crisis, as well as being pummelled by the climate crisis. This plan will drive down the costs of living and doing business, as well as make further cuts to climate pollution.
- › Our children will breathe easier, and our communities will be healthier as we close coal-fired power stations, clean up our transport system and get gas out of our homes.

## SNAPSHOT OF THE PLAN

How we build the clean economy to power our lives, set up our communities and kids for success, and end climate pollution.

### SOURCE RENEWABLE ENERGY:

We power a bigger national grid with 94% renewables, and shift almost entirely away from polluting electricity sources this decade.

- › **Empower households:** put power directly into the hands of households and save them money, with rooftop solar systems on four million more homes (totalling 24 GW).
- › **Lay the energy foundation for new clean industries:** keep growing large-scale renewable capacity to meet our energy needs and build a grid that can support clean export industries in the years ahead.
- › **Shore up supplies:** Provide clean and reliable electricity both day and night with 24 GW of new storage, by installing two million households batteries, and 5,000 community batteries.
- › **Electrify our buildings:** In parallel with the roll out in rooftop solar and batteries, we can electrify most Australian homes and workplaces using efficient electric appliances. New buildings can start all-electric.

### CLEAN UP TRANSPORT:

We halve transport pollution by giving city residents better travel choices, and moving goods in ways that pollute less, so we can all breathe easier.

- › **Boost shared and active travel:** Create healthier communities by shifting existing kilometres travelled by private car to shared and active transport at a rate of about 5% a year.
- › **Go electric:** Electrify our passenger fleet to see one-third of all passenger kilometres travelled by electric vehicles by 2030, by prioritising vehicles that travel most like taxis, rideshare vehicles and government fleets.
- › **Shift freight:** Shift one-third of road freight to rail by 2030 by increasing its use for packaged freight, and electrify more heavy vehicles so 17% of all road freight is moved more cleanly by 2030.

### MODERNISE INDUSTRY:

We build a mining and manufacturing sector that's fit for the 21<sup>st</sup> century, creating good jobs in clean industries that can power our prosperity for generations to come.

- › **Smarter ways of making:** Adapt manufacturing and mining to use renewable energy and industrial inputs where possible, and improve energy efficiency by 5% for iron, steel and chemical manufacturers, and 25% for cement.
- › **Recycle and reuse:** Prioritise collection and recycling of scrap metals, with a goal of seeing 35% of steel production and 40% of aluminium come from recycled materials.
- › **Grow clean industries:** Build industries that capitalise on our rich natural resources and clean power, like green metals manufacturing and critical mineral processing, and stop approving new coal mines or expansions that only add more climate pollution.

### CARE FOR LAND:

We care for our environment, support modern farming and waste disposal techniques so we halve emissions in these sectors collectively, creating a closed loop between what's still emitted and what's stored.

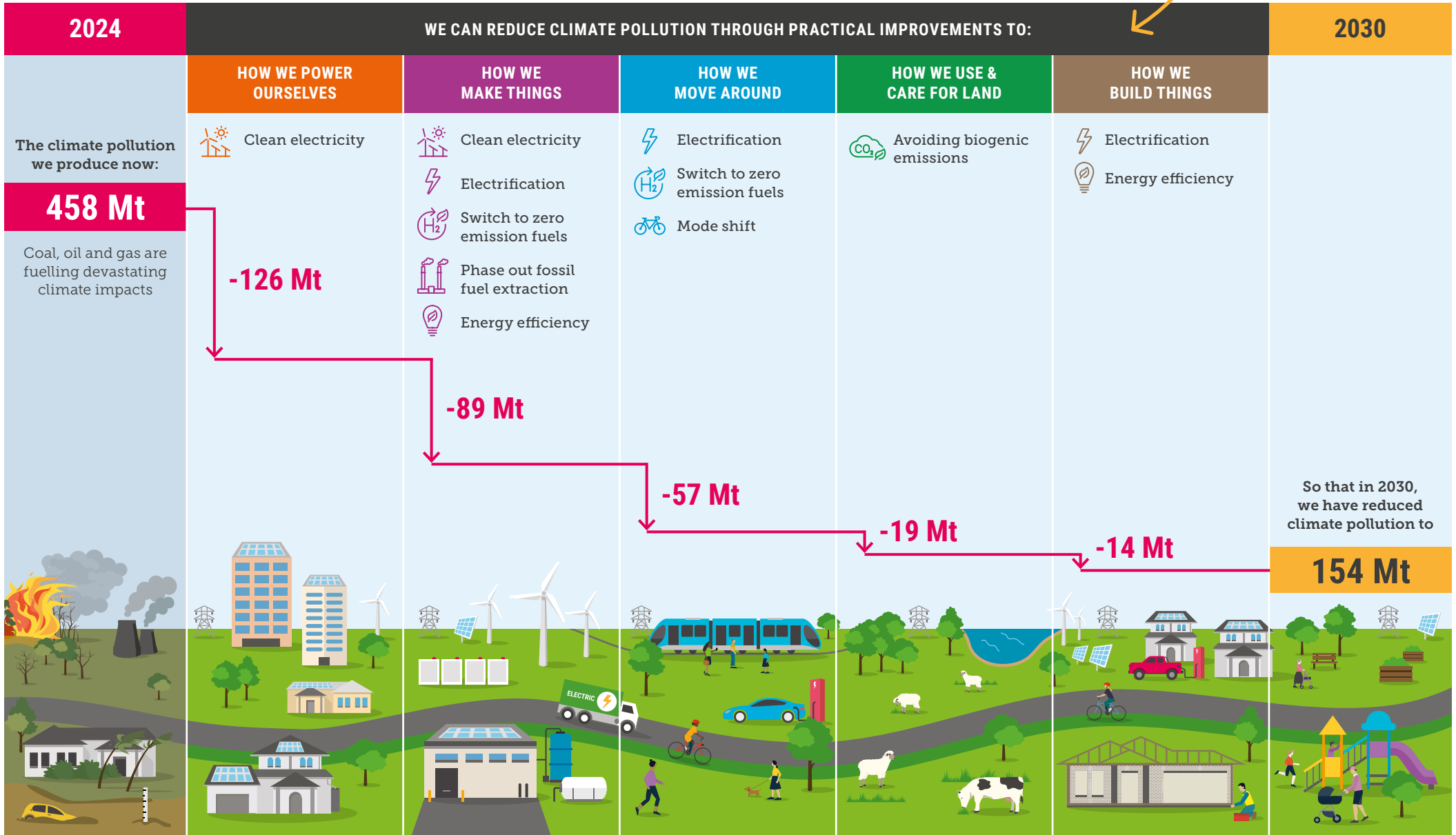
- › **Protect the environment:** Avoid releasing more greenhouse gas emissions by ending native forest logging, and phasing out land clearing.
- › **Support farmers:** Back in the roll out of modern techniques across agriculture — from feedlot additives to managing manure emissions to slow-release fertilisers — so we can cut annual agricultural emissions by around 4-5 Mt CO<sub>2</sub>e by 2030.
- › **Empower communities:** Improve access to and management of food and organic waste across the country.

# SEIZE THE DECADE

Climate change is hurting Australians and decisions made today will shape our kids future.

Let's seize the decade to build a clean economy and cut Australia's climate pollution 75% by 2030.

*We have a clear pathway based on necessary action.*





# Introduction

This is what our kids will talk about. The choices we made today that defined how safe or scary the world became as they grew up. The decisions to grow clean industries, which shaped their job market. The steps we took to make life easier for them, or so much tougher.

What we do right now matters. If we keep cutting climate pollution – more deeply and permanently **this decade** – we can stem the rapid rise of dangerous global heating that drives worsening extreme weather and threatens our kids' future. If we don't cut pollution fast enough or deep enough then the risks are catastrophic: a hotter and more unstable climate, ecological breakdown and economic chaos.

We have the chance to set our kids and our communities up to thrive with plenty of good jobs in renewable energy and clean industry. Cutting climate pollution further now makes their lives safer, and brings brighter opportunities. There is a once-in-a-century shift underway to scale up new ways of powering ourselves, making things, moving around and building our communities. Australia has world-beating resources in renewable energy, together with deep industry and manufacturing know-how. This can be our moment to shine so our country keeps prospering for generations to come.

We've come so far already. Today, around 40% of the power in our main national grid comes from clean, renewable sources like wind and solar. More than three million Australian households already enjoy lower power bills, having taken power into their own hands and put solar panels on their roof.

More electric vehicles are being sold every day to keen buyers, and investors are putting their money where it matters to clean up our existing industries and create new ones. We can build on this momentum to accelerate Australia's move to renewable energy and clean industries in the next few years by doing more of what we already know works. So we can make a real difference to Aussies' lives, while continuing to remove the pollution that fuels dangerous climate change.

This report is all about those solutions. The solutions that can collectively cut climate pollution by 75% by 2030, in line with what the science says is necessary. The solutions that we can keep rolling out or set up to end climate pollution. No empty promises, or excuses. No further delays, or wishful thinking that something else might turn up – just positive, practical actions we can get on with.

There's no time to waste, and our kids are depending on the choices we make now. Let's make sure that in the years to come, the stories they share are about how we got it right.







There's no time to waste,  
and our kids are depending  
on the choices we make now.





# 1.

Our choices,  
their future



## TODAY'S CHOICES CAN SET AUSTRALIA UP FOR DECADES OF PROSPERITY

This report provides an in-depth pathway for Australia to make deeper, genuine and permanent cuts to climate pollution by 2030. Much of this pathway describes how Australia can cut climate pollution across our domestic economy – getting our own house in order. We will electrify everything we can: powering our homes, businesses, industry and transportation systems with renewable energy, backed up by significant storage capacity.

At the same time, Climate Council's pathway lays the necessary foundations to set Australia up with new industries that will create good new jobs for Australian workers in the 2030s and well beyond. The most critical aspect of this work is continuing to expand Australia's renewable energy grid so that we can meet our growing domestic demand as we electrify everything, and produce the renewable energy needed to power new clean industries.

The Climate Council's plan outlines a progressive growth of clean solar and wind, backed up by storage, throughout this decade and into the next, so we are ready to seize the bright opportunities in front of us from 2030 onwards. We also need to scale up both the production of new industrial inputs like renewable hydrogen, and the roll-out of emerging technologies in sectors such as manufacturing. The benefits from these key steps will be experienced over many decades ahead, but this work must accelerate now. Australia is not the only country eyeing off these opportunities: if we don't seize them this decade we risk being left behind as other countries make the smart, once-in-a-century investments in new infrastructure, technology and energy these industries will be built on.

## MOMENTUM IS BUILDING BEHIND SOLUTIONS THAT WORK

The amount of new renewable energy added globally hit a record high in 2023, increasing by almost 50% to nearly 510 gigawatts (GW). This is the 22<sup>nd</sup> year in a row that the world has hit new heights in adding renewable generation capacity. The increases recorded in Europe, the United States and Brazil hit all-time highs, while China's acceleration was off the charts. In 2023, China commissioned as much solar photovoltaics (PV) as the entire world did in 2022, plus 66% more wind power than the previous year (IEA 2024). The 2023 United Nations international climate change conference in Dubai (COP28), countries agreed to work together to triple the world's installed renewable energy capacity by 2030.

In 2023, solar PV alone accounted for three-quarters of all new renewable energy capacity added. Over the next five years, this is expected to grow further with solar PV and wind accounting for almost all new generation because their costs are lower than any other alternative across most countries (IEA 2024).

**Australia is building out a modern economy, powered by renewable energy, so we can cut as much climate pollution as possible this decade. Current plans and policies are expected to get us halfway there, and Climate Council has developed a clear plan for the rest.**





Australia is a global leader in solar PV installations, with just over 1.1kW of solar per person installed at the end of 2022 (IEA 2024). In December 2023, the federal government announced that Australia is broadly on track to reach our national target of cutting climate pollution by 43% by 2030 with action underway and committed policies to be rolled out from this year (DCCEEW 2023a). Federal and state governments have been delivering a range of positive initiatives to support the roll out of more renewable energy, enable the switch to zero-emission vehicles and electrify homes and businesses. The building blocks of a modern economy, powered by abundant, affordable and reliable renewable energy are coming together. This is part of the growing momentum, here at home and around the globe, to build out renewable energy so we can phase out coal, oil and gas. With the committed policies in place Australia is on track to hit the existing 2030 target. That means we're already more than halfway there to achieving the cuts to climate pollution we need. The federal government has been clear its 43% target is "a floor, not a ceiling" (Bowen 2022). We now have an important opportunity to build on this momentum to accelerate action this decade.

## **SOLUTIONS ARE UNDERWAY, BUT SO IS THE CLIMATE CRISIS**

Humanity is at an inflection point. We are getting precariously closer to abrupt and irreversible changes to our climate system. At the same time, we are also seeing the rollout of solutions gain momentum. Our choices this decade will determine whether we can halt and then reverse runaway global heating.

2023 was the Earth's hottest year on record by a large margin (NOAA 2024). The average global temperature soared to 1.48°C above the pre-industrial average, surpassing the previous record set in 2016 by 0.16°C and exceeding the 1991-2020 average by 0.6°C (Copernicus 2024). We are all living in this age of climate consequences with extreme heatwaves in southern Europe, North America and China, devastating wildfires in Canada and Hawaii, and deadly floods in India, Brazil and Libya. Scientists were shocked by record-breaking sea surface temperatures globally in 2023 and record low sea ice extent around Antarctica.

**The world is warming faster than at any point in recorded history, and all Australians are in harm's way.**

## **BURNING COAL, OIL AND GAS IS PUSHING US CLOSER TO CLIMATE CATASTROPHE**

Burning coal, oil and gas emits heat-trapping pollution into the atmosphere forming a thicker blanket around the Earth and causing our planet to overheat. Fossil fuels account for more than 75% of global greenhouse gas emissions and nearly 90% of all carbon dioxide emissions – the main pollutant driving climate change (IPCC 2023; UN 2024). The Global Carbon Project, an international consortium of scientists, found that climate pollution from fossil fuels reached a record high level in 2023 (GCP 2023).

Because of this climate pollution, the world is now warming faster than at any point in recorded history (IPCC 2023). This is supercharging extreme weather events including bushfires, flooding rains and heatwaves that harm people and nature right around the world (IPCC 2023; UN 2024).





## AUSTRALIANS ARE BEING PUMMELED BY CLIMATE HARMS

Every Australian is affected by climate change, whether we've lost homes or livelihoods to fires or floods, been forced to pay higher prices for food or insurance, stayed indoors to avoid bushfire smoke blanketing our cities, been unable to get home due to heat-related transport disruptions, or witnessed our landscapes and wildlife being devastated by bushfires (Climate Council 2023a).

From the world's oldest forests to its largest coral reef system, Australia is home to some of the most remarkable ecosystems on the planet. These national treasures harbour an extraordinary array of plant and animal species; a majority of which are endemic – meaning they are found nowhere else on Earth. A recent CSIRO-led study reaffirmed that World Heritage Sites across Australia and around the world are “facing unprecedented challenges from climate change” (Lin et al. 2023).

More than half of Australia's economic activity is from industries which are moderately or highly dependent on a healthy environment (ACF 2022). From agriculture to tourism and from plantation forestry to food, industries employing millions of Australians face an increasingly uncertain future in a hotter climate. More frequent and intense droughts and bushfires would challenge the viability of big and small businesses across Australia; while the decline of precious natural wonders – like the Great Barrier Reef due to repeated marine heatwaves – is hitting our thriving tourism industry hard.

By cutting climate pollution deeply this decade we can protect Australians, communities worldwide, and the natural environment we all depend on for our health and wellbeing. In Climate Council's report *Mission Zero: How today's climate choices will reshape Australia*, we set out the science-backed benchmark for Australia to play our part in tackling global heating.



### What we need to do now: Australia's fair share in cutting climate pollution

Recognising the enormous risks of global warming beyond 1.5°C, Climate Council recommends that Australia's emissions reduction targets aim to limit warming as far as possible and with the highest probability of success. This means aligning as close as possible with a budget that provides a 67% chance of limiting warming to 1.5°C.<sup>1</sup>

Based on analysis of emissions to date and our country's relative capacity to make deep reductions now, globally renowned scientists conclude that **Australia should aim to cut climate pollution by 75% by 2030 compared with 2005 levels, and reach net zero by 2035.**

This report sets out the pathway for hitting that first milestone so we're on the right track to reach net zero by 2035. We have focused on the concrete actions we can take over the next few years to build on existing momentum and slash climate pollution during this make-or-break decade.



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For more detail on why Australia should work towards these goals in the years ahead, see the *Mission Zero* report (Climate Council 2023b).

<sup>1</sup> There is a very low likelihood of limiting warming to 1.5°C by 2100 without a temporary overshoot. Consistent with IPCC (2021), here we assume that the global average temperature peaks above 1.5°C and is returned to 1.5°C or below by 2100. This means quickly getting beyond net zero and removing large amounts of greenhouse gases from the atmosphere.

# 2.

A clear plan for Australia to build out renewable energy and clean industry to safeguard our future





Climate Council partnered with the Institute for Sustainable Futures at the University of Technology Sydney to complete Australian-first modelling on the specific solutions needed to make deep cuts to climate pollution this decade across electricity generation, transport, industry and our buildings. We have combined this modelling with our own expert analysis on solutions to cut climate pollution in agriculture, the land sector and for fugitive emissions.

Together, these steps set out a clear plan for cutting climate pollution across our entire economy and community, by 75% below 2005 levels by 2030. For the first time, we can see exactly what needs to happen and where to reach this science-aligned target, as part of getting Australia on the right path to net zero emissions by 2035. By doing what's possible now across every sector, we can cut climate pollution three times faster each year to 2030, compared with existing national plans.

This pathway is based on available solutions we can start delivering today using existing and proven technologies. We have prioritised solutions that replace the use of coal, oil and gas to deliver genuine, permanent emissions reduction wherever possible today. This plan provides certainty by minimising the use of land-based carbon offsets and carbon capture and storage, and not incorporating unviable proposals like nuclear energy or hydrogen being used in our homes or cars.<sup>2</sup> These things would delay us moving forward with solutions that we know are available now. Following this plan means Australia can play our part in keeping our kids safe from climate pollution and the escalating harms it causes and protecting ecosystems that underpin our well-being. It will clean up our air and make our communities healthier and safer today, while setting Australia on the right path to deliver good new jobs and thriving domestic industries powered by renewable energy this decade and for many to come.



### **Our plan is based on a comprehensive analysis of Australia's shift to renewable energy**

This modelling is based on a granular assessment of the existing and expected demand and supply of energy across the economy. This includes electricity, as well as demand for coal, oil and gas used in industrial production, transport and buildings. These fossil fuels represent more than 75% of Australia's final energy demand (ABS 2023).<sup>3</sup>

The modelling considers the interaction between the electrification of industry, transport and buildings, a necessary phase out of fossil fuels in electricity generation, and energy efficiency improvements. This means our plan provides a comprehensive pathway for Australia to fully embrace renewable energy.

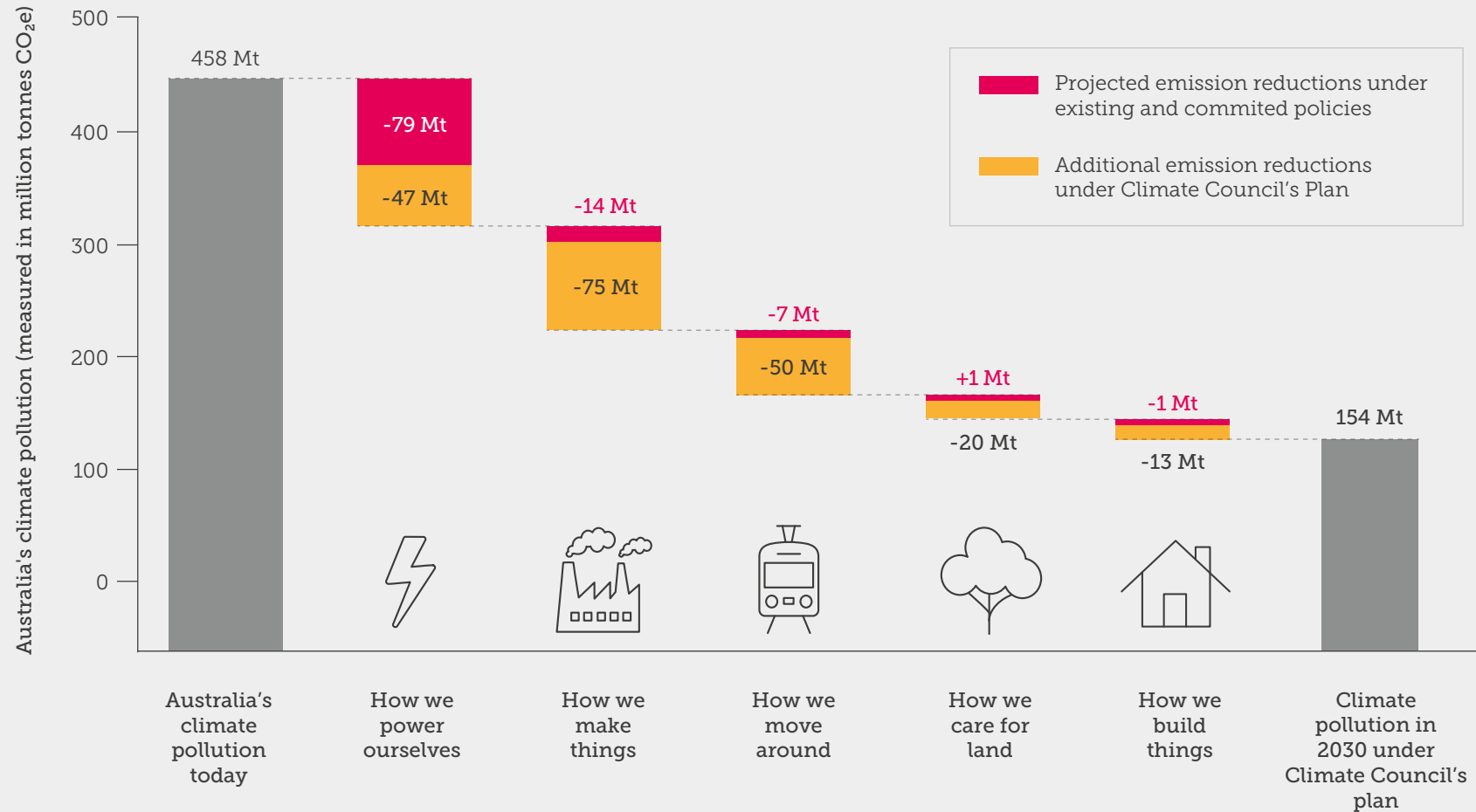
In addition, the modelling includes an assessment of ongoing, expected electricity supply and demand at an hourly and regional level. This demonstrates that Australia's energy needs can be met by 94% renewable electricity generation and storage by 2030, accelerating the changes already well underway in our energy system.

Full details of the modelling are provided in the *Technical Appendix* available on Climate Council's website: [www.climatecouncil.org.au/resources/seize-the-decade](http://www.climatecouncil.org.au/resources/seize-the-decade)

<sup>2</sup> The modelling and analysis in this report takes as its base Australia's 2023 emissions projections (DCCEEW, 2023a). These government projections assume some use of land-based offsets and carbon capture and storage (CCS) to offset industrial emissions. Climate Council's pathway does not assume any additional use of offsets or unviable technologies like CCS beyond those built into the existing emissions projections.

<sup>3</sup> Refers to domestic energy end use from non-electric sources, based on Table 3.1 (ABS 2023).

### THE PATH TO CUTTING CLIMATE POLLUTION BY 75% ON 2005 LEVELS BY 2030



Source: DCCEEW 2023a, Australia's emissions projections 2023; Climate Council analysis based on modelling prepared for Climate Council by Institute for Sustainable Futures, University of Technology Sydney.

## POWERING OURSELVES WITH RENEWABLE ELECTRICITY BACKED BY STORAGE

Electricity includes the generation, storage and transmission of power. Today, this sector adds climate pollution by burning coal, oil and gas to generate electricity. By 2030, renewable energy like wind and solar can meet almost all our electricity needs, with storage like batteries keeping power reliable and available around the clock.

### ELECTRICITY TODAY



Pollutes **139 Mt CO<sub>2</sub>e<sup>4</sup>**  
(expected 2024 emissions)



Makes up **30%** of  
national emissions



Reduced its climate pollution  
by **29%** since 2005

#### The transformation of Australia's electricity system is well underway.

- › Australia's ageing and increasingly unreliable coal-fired power stations are closing down. Under business-as-usual projections, all coal generators will be retired by 2038 at the latest — and likely much earlier.
- › Renewable energy from wind and solar, backed by storage, is by far the cheapest form of new electricity generation in Australia now. It is projected to keep getting cheaper (Graham et al. 2023).
- › As a result, affordable and clean renewable energy generation and storage continues to grow. It now provides more than 40% of the energy in the wholesale national electricity market (OpenNEM 2024a).
- › More than three million Australian families already have a rooftop solar system, and more than 300,000 systems are installed each year (Clean Energy Regulator 2024). Collectively, this rooftop solar contributed 11% of total power in the national electricity market last year, more than double that of gas (4.8%) (OpenNEM 2024a).
- › Our old electricity system was powered by a handful of large, high-polluting generators. The modern grid that's taking shape is clean, uses energy closer to where it's generated, is more resilient and diverse. It combines energy from rooftop solar panels on our homes with large wind and solar farms and a variety of storage solutions, like batteries and hydro-power.

#### Investment in renewable electricity generation, transmission and storage is accelerating.

- › The Federal Government's *Powering Australia Plan* has a target of 82% of Australia's electricity supplied from renewable sources like wind and solar by 2030. We are well advanced towards this goal based on capacity in the system today and committed new projects.
- › The *Capacity Investment Scheme* will help us reach this target by underwriting an additional 32 gigawatts (GW) of renewable energy capacity by 2030, including 23 GW of variable renewable capacity and 9 GW of dispatchable renewable capacity.
- › The Federal Government has committed \$20 billion in low-cost finance to unlock investment in transmission projects that are needed for Australia's renewable energy future. This funding is helping build a number of significant transmission projects including VNI West between Victoria and NSW, and Marinus Link between Victoria and Tasmania.

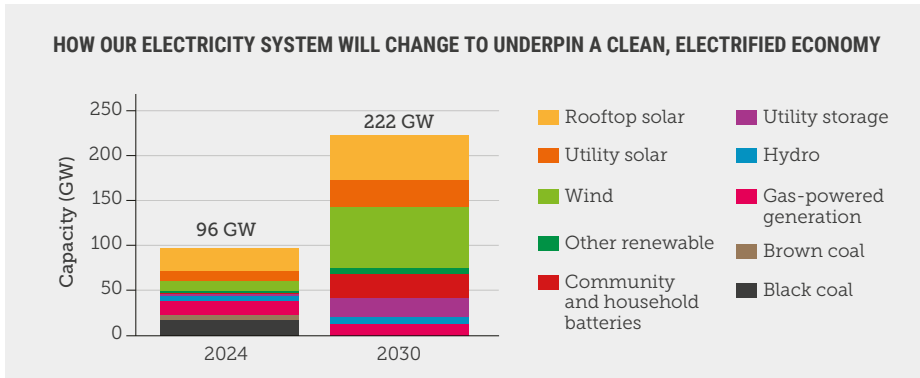
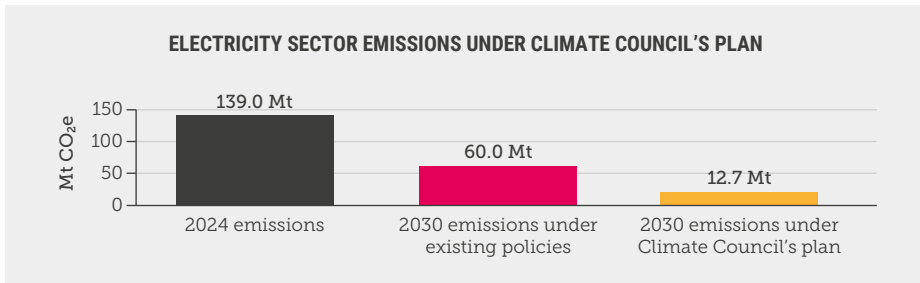
## POWERING OURSELVES WITH RENEWABLE ELECTRICITY BACKED BY STORAGE

Many more Australian families can save money with rooftop solar, backed by batteries and large-scale renewable projects, so we power Australia with 94% renewable energy and slash climate pollution.

### WHAT CAN WE DO?

Eliminate almost all climate pollution in electricity:

From 139 Mt CO<sub>2</sub>e in 2024 → To 12.7 Mt CO<sub>2</sub>e in 2030



Source: 2024 capacity based on AEMO (2023a), APVI (2024) and OpenNEM (2024b); 2030 based on Climate Council and ISF analysis.

### HOW WILL WE GET THERE?

Generate and store more power in Australian communities and homes

Save households money by putting rooftop solar systems on four million more homes (totalling 24 GW). This would more than double the number of homes with rooftop solar today, putting power directly into the hands of millions of Australians.

Shore up renewable energy supplies day and night by installing two million household batteries and nearly 5,000 community batteries (totalling 24 GW of storage).

Keep powering up clean, abundant and affordable electricity

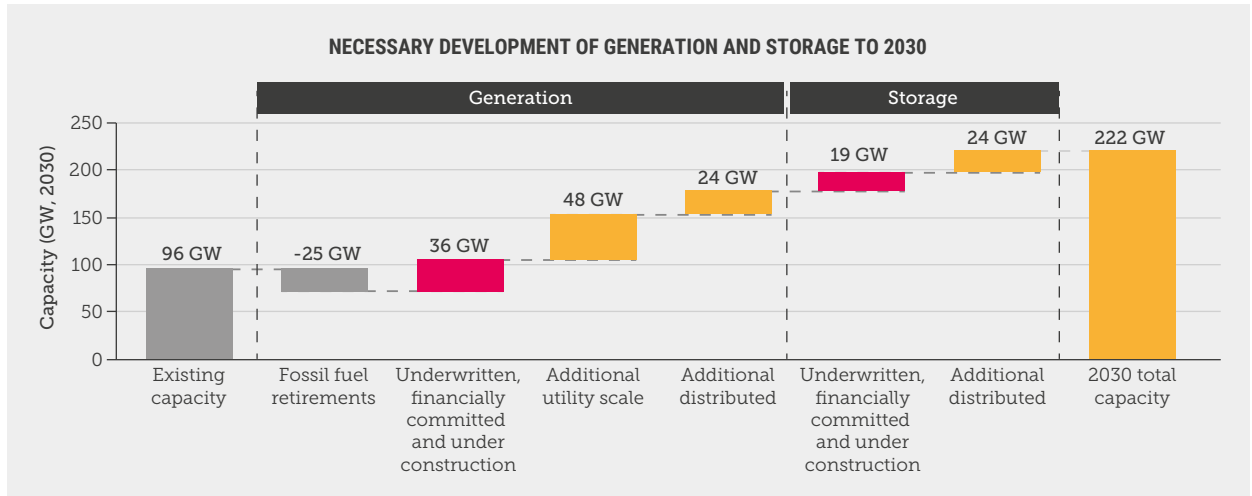
Between existing rooftop solar and large-scale renewable projects already built, in the pipeline or to be underwritten by existing schemes, we are on track to build more than half the 113 GW of large-scale capacity needed.

By expanding large-scale renewable electricity capacity we can meet our own energy needs and lay the foundation for new clean export industries. There are great opportunities in commercial and industrial rooftop solar and onshore wind to deliver further renewable electricity.

Utility-scale storage needs are expected to be fully met by existing government commitments, including storage to be underwritten by the expanded *Capacity Investment Scheme*. Anticipated pumped hydro projects will also be sufficient to meet storage needs.<sup>5</sup>

<sup>5</sup> Consistent with AEMO's 2024 Draft ISP (AEMO 2023b), we anticipate that 4.3 GW of pumped hydro capacity will be available in 2030, consisting of Snowy 2.0 (2.04 GW, 2029), Kidston (0.25 GW, 2025) and Borumba (1.99 GW, 2030).

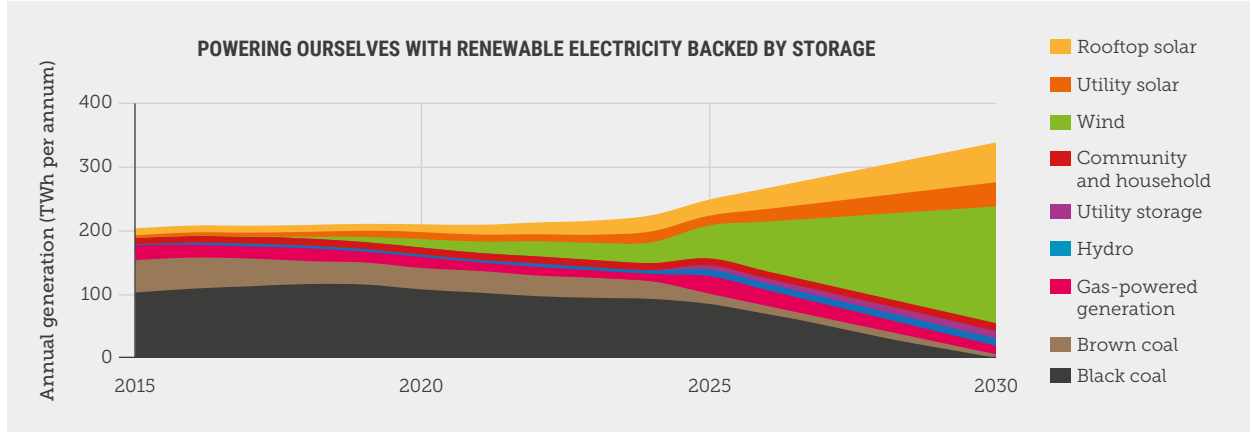
**POWERING OURSELVES WITH RENEWABLE ELECTRICITY BACKED BY STORAGE**



**With replacements in place, end coal power generation and start phasing out gas**

- Significantly reduce climate and air pollution with all coal-fired power stations able to close by 2030.
- Stop building new gas generation capacity unless it can run on 100% renewable hydrogen, and start reducing gas capacity in preparation for its phase out. Australia already has enough gas generation capacity today to meet occasional peaks in demand expected.

Source: Existing capacity based on AEMO (2023a), APVI (2024) and OpenNEM (2024b); Financially committed and under construction projects based on Clean Energy Council (2024) for generation and battery storage, (AEMO 2023b) for pumped hydro, and Capacity Investment Scheme underwriting based on DCCEEW (2023b); Additional necessary capacity based on Climate Council and ISF analysis.



Source: Generation refers to the NEM only. Historic generation based on AEMO (2023a); projected generation based on Climate Council and ISF analysis.







## ELECTRIFYING INDUSTRY AND SWITCHING TO OTHER ZERO-EMISSION FUELS

Coal, oil and gas are used as a fuel, a heat source and a feedstock in manufacturing and industrial production. Mining fossil fuels also releases polluting gases – referred to as fugitive emissions. With smart investments to adapt existing industries and capitalising on new mining and manufacturing opportunities, Australia can build an industrial base fit for the 21<sup>st</sup> century.

### INDUSTRY TODAY



Pollutes **164 Mt CO<sub>2</sub>e**  
(expected 2024)



Makes up **36%** of  
national emissions



Increased its climate  
pollution by **18%** since 2005

**The way we make things and mine resources is responsible for more than one third of Australia's emissions (DCCEEW 2023a).<sup>6</sup>**

- › Around 22% of Australia's emissions come from the process of mining – mostly from fossil fuels used in mining equipment, and fugitive emissions from coal and gas extraction. This highlights that coal and gas are a big source of climate pollution, even before these products are burned for energy.
- › Around 12% of national emissions come from manufacturing, which includes metals processing, cement production and production of chemicals such as ammonia. Manufacturers produce climate pollution both by burning fossil fuels, and during chemical reactions to convert raw materials to other products – like cement and fertilisers.
- › Switching from using gas for heat to efficient electric technologies can quickly reduce some climate pollution from manufacturing and mining. The Safeguard Mechanism – which was reformed in 2023 to require covered facilities to reduce their emissions year on year – is expected to drive a reduction of around 23 Mt CO<sub>2</sub>e from industry in 2030 relative to the unreformed mechanism (DCCEEW 2023a).

**Moving now to capitalise on zero-emission manufacturing is a pivotal national opportunity.**

- › As the world moves away from burning coal, oil and gas, the markets for climate polluting products are shrinking. Australia can build new export opportunities based on our massive natural advantage in renewable energy and critical minerals that are the building blocks for clean industries.
- › Some manufacturing processes use fossil fuels as a feedstock and for heat production. Alternatives are being piloted and scaled now, and are expected to improve towards the end of this decade. Renewable hydrogen produced using clean energy will be needed to replace gas for some types of manufacturing. The renewable hydrogen industry in Australia is in early stages of development, but it can start to replace fossil fuels more often as both its production costs and the upfront cost of hydrogen-based manufacturing technologies decline.
- › Production of green manufactured goods like iron, steel, alumina and ammonia is an important economic opportunity for Australia. But to date, government support has lacked focus. For example, there are no pilot projects in Australia trialling use of renewable hydrogen for iron production or industrial process heat – despite these uses potentially being highly strategic for Australia. Expanding production of critical minerals – like lithium, nickel and vanadium – and moving up the value chain to process more of these in Australia is another potential high-demand market that we are only just beginning to pursue in earnest.



## ELECTRIFYING INDUSTRY AND SWITCHING TO ZERO-EMISSION FUELS

Plenty of industrial processes can already swap out fossil fuels for renewable electricity. Scaling up renewable hydrogen will mean even more businesses can switch to cleaner ways of making things here in Australia.

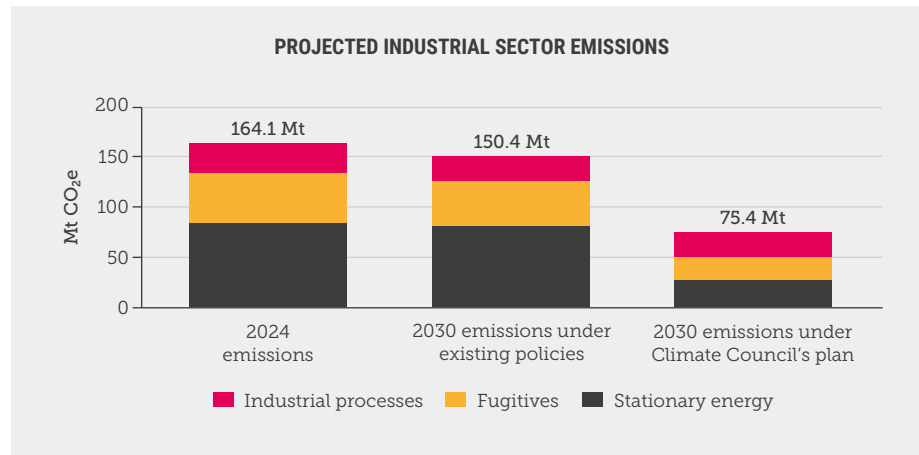
### WHAT CAN WE DO?

More than halve industrial climate pollution:

From 164 Mt CO<sub>2</sub>e in 2024



To 75.4 Mt CO<sub>2</sub>e in 2030



### HOW WILL WE GET THERE?

Use readily-available alternatives so we can replace some fossil fuels.



Reduce industrial use of coal (-41%), oil products such as diesel (-86%) and gas (-31%) using available technology. Cement and metals manufacturing can make use of biomass and biofuels, while electrifying heavy machinery in mining can reduce the use of diesel and petrol.



Replace these fuels with renewable energy sources, including electricity,<sup>7</sup> geothermal, biomass and biofuels and, in early adopters, green hydrogen. This will need a focused scale-up of domestic production for these clean alternatives.

Invest in smarter ways to make things.



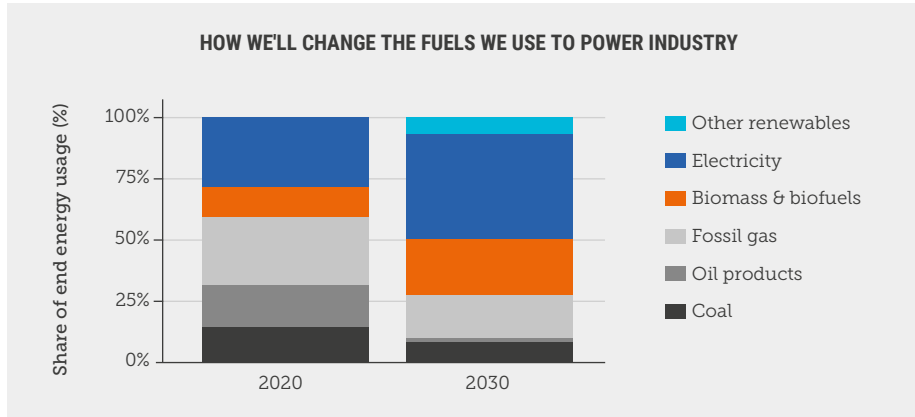
Prioritise collection and recycling of scrap metals, with a goal of providing 35% of steel and 40% of aluminium production from recycled materials. Today, most of the metal collected for recycling in Australia is exported (Blue Environment 2022). Recycling more onshore can cut climate pollution and create jobs.



Improve energy efficiency by approximately 5% for iron, steel and chemical manufacturers, and 25% for cement manufacturing.

<sup>7</sup> Additional demand for electricity from industrial electrification is accounted for within the electricity sector modelling on p. 12.

## ELECTRIFYING INDUSTRY AND SWITCHING TO ZERO-EMISSION FUELS



**Deal with climate pollution from existing coal mines, and stop expanding or adding more.**



Stop approving new coal mines or expansions, because every one adds more climate pollution in Australia, as well as overseas when coal is burned. New coal mines and extensions proposed today could release 9 Mt CO<sub>2</sub>e a year by 2030.



Deal with climate pollution at existing coal mines. For Australia's dirtiest six coal mines alone, this could cut 9 Mt CO<sub>2</sub>e every year in fugitive emissions.



Lower household and industry demand for gas can also cut fugitive emissions by a further 4 Mt CO<sub>2</sub>e.



Together, these reductions are equivalent to the annual emissions from all of Australia's trucks.



## USING SHARED, ACTIVE AND ELECTRIC TRANSPORT TO GET AROUND AND MOVE FREIGHT

We get around and move freight in lots of ways, including by road, rail, ship and plane. Whenever we burn fossil fuels such as petrol and diesel to power cars, trucks, trains, planes or ships we're adding to climate pollution. Growing shared, active and electric transport options means better ways to get from A to B and healthier communities.

### TRANSPORT TODAY



Pollutes **102 Mt CO<sub>2</sub>e**  
(expected 2024)



Makes up **22%** of  
national emissions



Increased its climate  
pollution by **24%** since 2005

#### Polluting cars dominate most personal travel with uptake of electric vehicles held back by a lack of fuel efficiency standards.

- › Road transport is responsible for the bulk of transport emissions – with cars and light commercial vehicles making up around 60% of this climate pollution (DCCEEW 2023a).
- › Passenger transport is heavily dominated by cars in Australia, with relatively limited use of shared and active transport. Only around 7% of Australian passenger travel is public transport and less than 4% is walking or bike riding (BITRE 2023).
- › Uptake of electric vehicles is increasing rapidly in Australia. New electric vehicle sales jumped to almost 9% in 2023 – more than double the previous year (EVC 2023). Despite this, Australia lags behind comparable countries because we have been slow to introduce standards that encourage manufacturers to sell more low- and zero-emission vehicles.

#### Most freight is transported by rail or road.

- › Rail and road carry most of Australia's freight, with a relatively small amount of domestic shipping and air freight. Of all freight kilometres travelled in 2022-23, 57% were by rail, 31% by road, 12% by coastal shipping and less than 1% by air (BITRE 2023).
- › Importantly, while rail moves the vast majority of bulk freight such as minerals and grain, 80% of packaged freight is transported by road. Packaged freight, also known as non-bulk freight, is a broad category that includes foods, drinks, produce, post and manufactured goods.



## USING SHARED, ACTIVE AND ELECTRIC TRANSPORT TO GET AROUND AND MOVE FREIGHT

We will all breathe easier if we reduce transport pollution. The health benefits of doing so are instantaneous and significant. By shifting more trips to shared and active options, and electrifying more vehicles, we can cut climate and air pollution, enjoy quieter and cleaner neighbourhoods, and make our roads safer for walkers and cyclists.

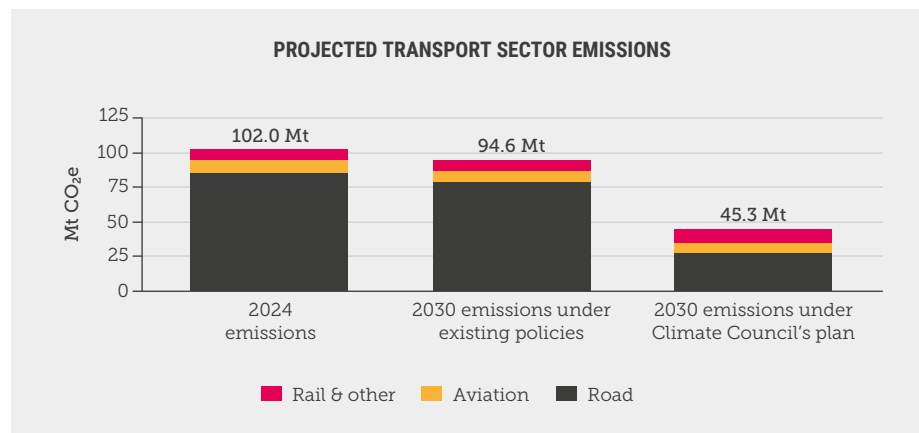
### WHAT CAN WE DO?

Halve climate pollution in transport:

From 102 Mt CO<sub>2</sub>e in 2024



To 45.3 Mt CO<sub>2</sub>e in 2030



### HOW WILL WE GET THERE?

**More daily trips using shared, active and electrified options**



Create healthier communities by shifting a total of 30% of projected private vehicle kilometres in 2030 to shared and active transport. This will mean shifting existing kilometres travelled by private car to shared and active transport at the rate of around 5% a year, and seeing all growth in passenger travel this decade taken up by these modes.<sup>8</sup>



Entice more travellers toward long-distance passenger rail services and away from domestic air travel, where possible, to hold passenger kilometres travelled to adjusted 2020 levels.<sup>9</sup>



Electrify our passenger fleet to see one-third of all passenger kilometres travelled by electric vehicles by 2030. An efficient way to achieve this would be to prioritise electrifying vehicles that travel the most kilometres first, like taxis, rideshare vehicles and government fleets.

**Shift more freight onto rail and start electrifying heavy vehicles**



Shift one-third of road freight to rail by 2030, by increasing the use of rail for packaged freight.



Electrify more heavy vehicles, so that 17% of all road freight can be transported by zero-emission vehicles by 2030. Electrification of road vehicles is the most efficient option to cut road freight pollution and the technologies are improving rapidly.



Prioritise air freight for genuinely time-sensitive transport needs to keep existing use constant as our economy continues to grow, with more use of rail for interstate transport of consumer goods and other freight.




<sup>8</sup> Historic growth rate based on growth in passenger kilometres travelled by passenger car over the 10 years to 2018-19 (as the final year unaffected by COVID-19). Data sourced from Table 5.1, BITRE (2023).

<sup>9</sup> Annual growth in domestic aviation passenger kilometres reduces from the historic growth rate of 2.6% to 1.7% per annum. See note 4 for details of historic growth rate estimation.

## PROTECTING AND RESTORING OUR LANDSCAPES

Land, agriculture and waste are mostly biogenic sources of greenhouse gases, meaning they are created through the decomposition of organic materials. This includes emissions released from livestock, cropping, logging and clearing of land and forests, and the breakdown of waste in landfill. This calls for different solutions than phasing out fossil fuels. Over this decade we can work towards creating a closed loop between sources and sinks of pollution within this sector.

### WHERE ARE WE NOW?

|  Expected 2024 emissions |  Share of national emissions |  Change in emissions since 2005 |
|---|---|--|
| <b>Agriculture:</b><br>80 Mt CO <sub>2</sub> e  | 17.5%   | 7% reduction   |
| <b>Land:</b> <sup>10</sup><br>-58 Mt CO <sub>2</sub> e  | -12.7%  | 172% reduction   |
| <b>Waste:</b><br>13 Mt CO <sub>2</sub> e  | 2.8%  | 19% reduction  |

Raising animals for meat and dairy is the main source of agricultural emissions, and scalable solutions to reduce these are still emerging.

- › Livestock including grazing cattle, dairy cattle and sheep are responsible for around 80% of Australia's greenhouse gases from agriculture. Grazing cattle alone accounts for half of the greenhouse gases produced by the agriculture sector (DCCEEW 2023a).
- › Most of these greenhouse gases come from methane-producing microbes in the guts of these animals. These emissions are difficult to reduce, and a range of technologies are in development. Feed additives such as 3-NOP are available in Australia and effective at reducing emissions from feedlot and dairy cattle, but slow release formulations are needed for grazing livestock (Agriculture Victoria 2022).
- › The remainder of agricultural greenhouse gases come from crops, nitrogen fertilisers and other animals.

Whilst being a net sink overall, the land sector is also a source of greenhouse gases because of practices like logging and land clearing.

- › Clearing native vegetation was responsible for releasing around 27 Mt of greenhouse gases in 2023 (DCCEEW 2023a). Most land clearing in Australia is done to create pasture for grazing cattle, and most of this activity takes place in Queensland.
- › Separate to land clearing, native forest logging releases around 11 Mt of greenhouse gases a year (The Tree Projects 2022a, 2022b, 2022c)<sup>11</sup>. Accounting practices only require reporting of the net emissions from managed forests, which is a barrier to understanding the full benefits of protecting forests.
- › Native forest logging was recently banned in Western Australia and Victoria, but it is still permitted in Queensland, New South Wales and Tasmania. In 2021, Australia signed an international pledge — alongside more than 140 other countries — to halt and reverse deforestation and land degradation by the end of the decade.

<sup>10</sup> 'Land' refers to the Land Use, Land Use Change and Forestry (LULUCF) sector. This is the only sector that includes emissions by sources and removals by sinks. The sector is currently a net sink of emissions, and this sink is projected to grow, but there are also significant sources of emissions within this sector.

<sup>11</sup> This is a sum of the direct emissions from logging, and the residual emissions from previous logging in Victoria, Tasmania and New South Wales (these come from logging residues that are left behind on site, such as branches, leaves, and stumps, which can take 25-50 years to decompose). The reduced removals of emissions associated with preventing the forests from continuing to grow is not included in this calculation.

## PROTECTING AND RESTORING OUR LANDSCAPES

Australia can keep farming, better protect our precious landscapes and restore our environment by ending native forest logging, reducing land clearing, and improving agriculture and waste practices.

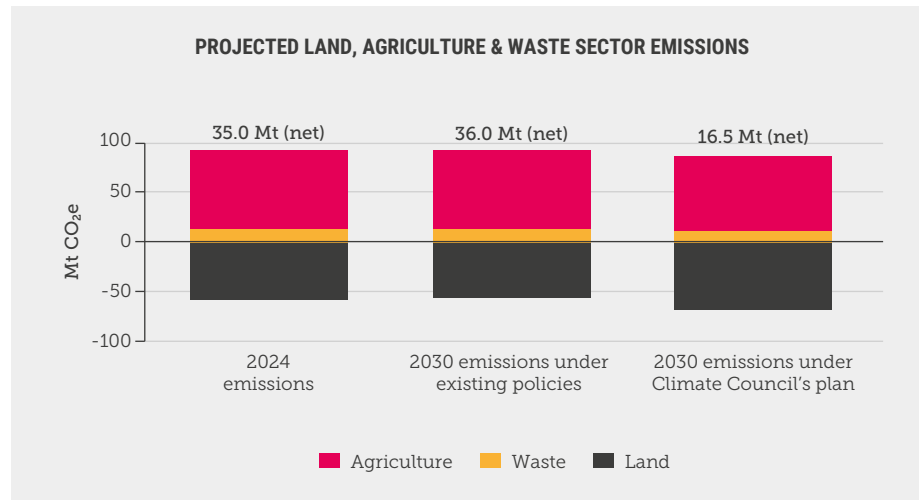
### WHAT CAN WE DO?

Halve emissions and move towards a closed loop for those that remain:

From 35 Mt CO<sub>2</sub>e in 2024



To 16.5 Mt CO<sub>2</sub>e in 2030



### HOW WILL WE GET THERE?

#### Protect forests and restore more land

- End native forest logging to avoid releasing emissions from disrupted vegetation and soils, and capture more carbon dioxide by allowing forests to grow. Ending native forest logging is estimated to reduce net emissions by around 6-7 Mt CO<sub>2</sub>e a year for the next 20 years.



Phase down land clearing through tightening restrictions on clearing remnant vegetation and providing incentives to reduce secondary regrowth clearing so we restore more land. This could avoid an estimated 5 Mt CO<sub>2</sub>e.



Work towards a closed loop for the agriculture and land sectors that reaches net negative emissions over time. This involves progressively phasing down the use of land-based offsets against fossil fuel pollution as we replace the use of coal, oil and gas with clean alternatives in other sectors.

#### Use all available and emerging solutions to cut agricultural emissions



Administering feed additives to dairy and feedlot cattle; managing manure emissions via covered anaerobic ponds; and replacing conventional nitrogen fertilisers with coated slow-release versions all reduce emissions (Davis et al. 2023). For grazing cattle, solutions include developing slow-release feed additives, selective breeding of lower methane cows and incorporating legumes into pastures. Together, actions like these could cut agricultural emissions by around 4-5 Mt CO<sub>2</sub>e a year by 2030.

#### Better collection and treatment of food and garden organic waste



Roll out food organics and garden organics (FOGO) collection services for all urban households and businesses. As part of the Federal Government's National Waste Strategy, all jurisdictions have signed up to increase the recovery rate for all waste streams to 80% by 2030, with the rollout of FOGO services being a key action within this strategy. Achieving the 80% recovery target for organic waste streams would cut a further 2 Mt of CO<sub>2</sub>e a year (DCCEEW 2023c). Processed organic waste can be reused to replace some use of synthetic fertilisers.



## LIVING AND WORKING IN BUILDINGS THAT ARE ELECTRIFIED AND EFFICIENT

The built environment refers to energy used in our homes, workplaces, and other buildings besides electricity.<sup>12</sup> Climate pollution in this sector comes from burning fossil fuels – primarily gas – for heating, hot water and cooking. When our homes and businesses are inefficient they waste energy and money. Improving our buildings and appliances is one of the simplest and fastest ways to cut climate pollution with technology and materials that are widely available and scaleable today.

### OUR BUILT ENVIRONMENT TODAY



Pollutes **18 Mt CO<sub>2</sub>e** each year



Makes up **4%** of national emissions



Pollution has increased **15%** since 2005

#### Too many Australian homes are poorly built and still use polluting and expensive gas.

- › Most residential homes built since 2010 in Australia only meet minimum building efficiency standards – 6 out of 10 stars – and older homes are even worse.
- › The 6-star minimum standard is around 40% less efficient than the building standards enjoyed in countries like the United States, Canada and the UK (Moore 2019). This is why so many homes are stifling in summer or freezing in winter. We use much more energy for heating and cooling than we would otherwise need – wasting money, and adding to pollution.
- › The National Construction Code was recently updated to require new homes are 7-stars and meet a new annual energy budget for major appliances.
- › Around Australia, about half our homes are connected to polluting gas for their heating, cooking or hot water (Energy Networks Australia 2021). Most of these are in Australia's southeast, where gas use and power bills are most costly in winter.
- › The Australian Capital Territory (ACT) and Victoria are leading the nation by requiring new homes to be all-electric and ending new gas connections. This will significantly reduce both climate pollution and power bills for households.

#### Commercial buildings, from offices to nursing homes, account for a third of building emissions

- › Ratings systems such as the National Australian Built Environment Rating System (NABERS) and Green Star, alongside the Commercial Building Disclosure Program, are improving the energy efficiency of commercial buildings (COAG Energy Council 2018).
- › Between 2013 and 2023, commercial buildings became about 13% more efficient in their use of gas, and 15% more efficient in their use of electricity (Strategy. Policy. Research. 2022).
- › With the right, updated requirements in place (due in 2025) new commercial buildings could be 26% more efficient, saving businesses more money and cutting climate pollution (Foo et al. 2022).

## LIVING AND WORKING IN BUILDINGS THAT ARE ELECTRIFIED AND EFFICIENT

Better buildings means we can live and work in places that are more comfortable, ease the costs of living for households and businesses, and slash climate pollution.

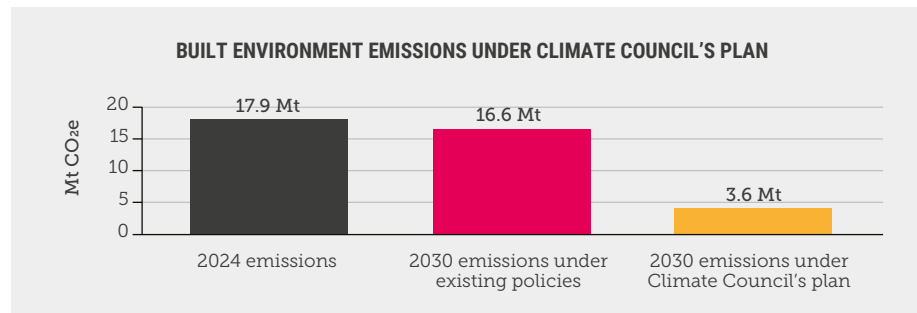
### WHAT CAN WE DO?

Slash climate pollution from buildings:

From 17.9 Mt CO<sub>2</sub>e in 2024



To 3.6 Mt CO<sub>2</sub>e in 2030



**Buildings play a dual role in cutting climate pollution, because of their electricity use.**

Buildings use a lot of electricity for heating, cooling, cooking and water heating. So everytime we need less electricity to power ourselves, this cuts pollution in the energy sector.

By making buildings more efficient, we can better manage Australia's overall electricity demand as we electrify everything. Managing demand allows us to meet our electricity needs with renewables more quickly, so we can replace polluting sources of energy faster too.

### HOW WILL WE GET THERE?

Smarter energy use, and speeding up electrification



Electrify most Australian homes and workplaces using efficient electric appliances in parallel with a roll-out of rooftop solar and household batteries to cut power bills and climate pollution.



Upgrade the thermal efficiency of residential buildings by approximately 8% and 12% for residential and commercial buildings respectively using relatively low-cost upgrades like insulation, window glazing and gap sealing.



Ensure all new homes built are all-electric, and coordinate an orderly phase out of gas from existing buildings, in favour of electrification.










Electrification and energy efficiency upgrades can ease cost of living pressures, saving Australian households from \$1,119 to \$2,872 a year depending on where they live (Climate Council 2023b).



## SEVEN KEY DRIVERS OF A THRIVING CLEAN AUSTRALIA

This analysis shows there are seven key drivers to building out Australia's clean economy so we can end climate pollution. The policy gallery in Section 3 explores actionable options to achieve the speed and scale of emissions reduction identified in Climate Council's plan. Throughout, we have identified how each policy option is linked to one of these key drivers.

| DRIVER   | ECONOMIC SECTOR/S                           |
|--|---|
| <b>1</b>  <b>Renewable electricity</b><br>Making our electricity from renewable sources like solar and wind, backed by storage        | Electricity generation<br>Industry          |
| <b>2</b>  <b>Electrification</b><br>Switching from coal, oil or gas to electricity as an energy source                                | Industry<br>Transport<br>Built environment  |
| <b>3</b>  <b>Switch to zero-emission fuels</b><br>Replacing fossil fuels with alternative zero emissions fuel like renewable hydrogen | Industry<br>Transport (aviation & shipping) |
| <b>4</b>  <b>Phase out fossil fuel extraction</b><br>Wind down coal, oil and gas extraction  | Industry                                    |
| <b>5</b>  <b>Energy efficiency</b><br>Using the most efficient fuels, in the most efficient way                                     | Industry<br>Built environment               |
| <b>6</b>  <b>Mode shift</b><br>Moving from high-polluting transport modes to low or zero emissions options                          | Transport                                   |
| <b>7</b>  <b>Avoiding biogenic emissions<sup>13</sup></b><br>Reducing the release of pollution from natural sources                 | Agriculture<br>Land and waste               |





# 3.

We're on the right track. It's time to accelerate practical solutions





**Around Australia, governments, businesses and communities have started delivering a wide range of investments and initiatives that cut climate pollution.**

The Australian Government is bringing online huge amounts of large-scale renewable energy, storage and transmission, so that we're set up as ageing and unreliable coal-fired power stations keep closing. Tasmania and the ACT are already fully powered by renewable energy like wind, solar and hydro. Victoria is getting off gas and local governments around the country are making plans to join them. South Australia has put the pedal to the metal on integrating electric vehicles into the energy system. Queensland, Western Australia and the Northern Territory are racing to scale up renewable hydrogen to cleanly power the next era of Australian manufacturing.

We're transforming our economy and delivering benefits like cleaner and more affordable energy, new jobs, protecting the environment, and less climate pollution. We can build on this progress and do more during this make-or-break decade for climate action.

Governments can lead in delivering the necessary steps mapped out by this plan. Policy and investment can provide clear signals and the right incentives for industry and communities to keep on doing what works. Building from our analysis of the priority drivers for cutting climate pollution across key sectors (pp. 10-25), Climate Council has undertaken a detailed scan of the barriers to these actions happening at the speed and scale we need now. These are often different across sectors; all will need smart policy and focused action to address.

Climate Council has identified policy actions across all levels of government that can keep Australia accelerating towards a clean economy without climate pollution. In this report, we provide a high level summary of these options; forthcoming Climate Council work will unpack selected priority policy actions in more detail.

**The building blocks of our clean economy are in place and delivering benefits thanks to governments, communities and private investment. We can build on this progress, and cut climate pollution further in this make-or-break decade.**

## POLICIES TO EXPAND OUR RENEWABLE ELECTRICITY GRID BACKED BY STORAGE

Around Australia, there is a significant amount of work, policy and investment already underway to build a clean, reliable and affordable energy system powered by renewables. The policies presented here have been designed to build on this momentum so we have enough renewable energy to underpin electrification across all other parts of our economy and community, and lay the foundations for new clean industries in the next decade.

| POLICY INITIATIVE                     | SECTOR BARRIERS ADDRESSED       |                         |                    |                              |                              |                       |
|---------------------------------------|---------------------------------|-------------------------|--------------------|------------------------------|------------------------------|-----------------------|
|                                       | Availability of skilled workers | Supply chain challenges | Land use conflicts | Investment/ market readiness | Community and social licence | Regulatory incentives |
| Australian Energy Corps               | ✓                               |                         |                    |                              | ✓                            | ✓                     |
| Aussie Solar Drive                    |                                 |                         | ✓                  | ✓                            | ✓                            | ✓                     |
| 100% renewable public power           |                                 |                         |                    | ✓                            |                              | ✓                     |
| National Clean Power Map              | ✓                               |                         | ✓                  | ✓                            | ✓                            |                       |
| Regional benefits sharing             |                                 |                         | ✓                  | ✓                            | ✓                            | ✓                     |
| Community-led renewables              |                                 |                         | ✓                  | ✓                            | ✓                            |                       |
| Virtual transmission                  |                                 | ✓                       | ✓                  |                              | ✓                            |                       |
| Recycle renewable energy materials    |                                 | ✓                       |                    |                              | ✓                            | ✓                     |
| Strategic Supply Stability Initiative |                                 | ✓                       |                    | ✓                            |                              | ✓                     |

## Establish the Australian Energy Corps

The Federal Government can address the urgent need for more skilled renewable energy workers by establishing the Australian Energy Corps as an integrated network for training, placing and supporting workers. This would bring together existing national skills and training initiatives with new components to maximise the speed and effectiveness of high-quality training leading to good quality jobs.

### Drivers



Renewable electricity

### Delivery



Federal government

### Status



New initiative

### Benefits



Good jobs



Competitive businesses



Empowered communities

The Australian Energy Corps would include the following components:

- › **Free apprenticeship training for participants in electrical and renewable energy trades.** This would leverage and expand on existing free TAFE initiatives under the National Skills Agreement. To ensure there are enough training places for a new influx of apprentices, federal and state governments can make a significant injection of funding and capital investment into local public TAFEs and not-for-profit training providers.
- › **Safe, supervised on-the-job training and placement on major renewable energy projects.** The Australian Energy Corps would act as a dedicated apprentice support network for energy workers, connecting apprentices with local Group Training Organisations run in partnership between unions and industry as their host employer. This would enable participants to undertake placements across multiple workplaces and types of projects during their training, broadening their skills while maintaining a continuous training contract. Mandatory apprentice requirements for major renewable energy generation and infrastructure projects – like those funded under Rewiring the Nation and the Capacity Investment Scheme – would provide a continuous pipeline of placement opportunities.
- › **Simpler requirements and reduced paperwork for companies.** This approach would significantly streamline the process for companies engaging energy apprentices, as it would involve contracting their work via a Group Training Organisation employing Australian Energy Corps apprentices instead of forming standalone training agreements. Companies would also have access to a greater diversity of energy training skills sets, depending on their needs throughout the project development cycle.
- › **Dedicated streams for new apprentices and upskilling or reskilling workers.** Australia's existing energy workforce is a huge resource of workers with relevant skills and experience for renewable energy jobs. The Australian Energy Corps would support the upskilling and reskilling of existing trade qualified energy workers from related industries through tailored training programs and supervised work placements, and provide full apprenticeships for workers at the start of their energy careers.

The Australian Energy Corps could be established for a fixed 10-year period to boost our renewable energy workforce during this critical period for delivering new energy generation and infrastructure. Training a large number of energy workers now will ensure Australia has enough skilled workers to deliver the ongoing pipeline of work expected over coming decades.

## POLICIES TO EXPAND OUR RENEWABLE ELECTRICITY GRID BACKED BY STORAGE

## Lead the Aussie Solar Drive

Everyone can benefit from and play a part in Australia's move to clean, affordable energy. A fully renewable grid will be powered by a mix of rooftop solar in our cities and suburbs, and utility-scale solar and wind projects in the regions or offshore. With a lot of the utility-scale generation capacity and storage Australia needs already on the way, there is an opportunity to focus on scaling up rooftop solar.

## Drivers



Renewable electricity

## Delivery



Federal government



State governments



Local governments

## Status



Builds on existing initiatives

## Benefits



Good jobs



More affordable, reliable energy



Empowered communities



Cleaner air

Governments can coordinate a national push to make rooftop solar ubiquitous across Aussie homes, businesses and industry, capitalising on the huge resource that is our world-beating sunshine. One in three households have already installed solar to take power into their own hands and experience bill savings. The Aussie Solar Drive will prioritise expanding solar power to households and businesses who face barriers, by enabling:

- › **Community solar for people living in apartments and rental properties.** The federal and state governments can collaborate to scale up the successful [Community Solar Banks](#) initiative, which has been piloted and developed in several states, to improve access to solar power for people who don't live in their own, freestanding homes.
  - › **Free solar on public housing.** State governments can use green bonds to finance the upfront cost of installing solar on all public housing properties they own: giving residents access to cleaner, more affordable power while contributing new capacity to the grid. The repayment costs of these green bonds can then be met through reduced need for energy bill subsidies for residents, which are a significant ongoing cost for state governments. Singapore's housing agency has adopted this approach to delivering green upgrades across its property portfolio (Housing and Development Board 2022).
  - › **Solar on all new-build freestanding homes and community facilities.** The federal and state governments can update the National Construction Code to require all suitable new and substantially rebuilt homes to have rooftop solar.
- Local governments can update planning rules to require all new community facilities and other shared-user facilities under single ownership, like retirement villages and shopping centres, to have rooftop solar.



## Lead the Aussie Solar Drive (Cont.)

- › **Commercial and industrial solar.** The federal government can develop a targeted version of the [Small-scale Renewable Energy Scheme](#) (which is ending) that applies specifically to commercial and industrial solar installation. Commercial and industrial building owners would be required to install a minimum amount of solar on their premises. Those who install more than the minimum amount would earn certificates that they can sell to businesses who can't install this amount.

State governments can update planning laws to require new commercial buildings and car parks to have solar panels, as is currently the case in countries like France and Germany (Ryan 2022).

Local governments can make [Environmental Upgrade Agreements](#) widely available for major commercial buildings that install solar to help overcome finance and incentive barriers to owners undertaking significant upgrades.



## POLICIES TO EXPAND OUR RENEWABLE ELECTRICITY GRID BACKED BY STORAGE

## Source 100% of public electricity needs from renewable sources

Clean, affordable renewable energy is a great option for everyone, including governments which are often large energy users in their own right.

### Drivers



Renewable electricity

### Delivery



Federal government



State governments



Local governments

### Status



Builds on existing initiatives

### Benefits



Good jobs



More affordable, reliable energy



Cleaner air

Federal, state and local governments can all put in place arrangements to source 100% of their energy needs from renewable sources. In doing this, governments should prioritise installing their own distributed energy resources wherever possible, followed by entering into power purchase agreements with energy providers where this is not an option. When entering into power purchase agreements, government agencies can aggregate their electricity demand into bulk supply agreements with the costs shared across government. This will help further grow renewable energy supply and ensure governments are contributing to building a cleaner grid through their own actions as well as their policy and public investment decisions.

## Deliver a National Clean Power Map

Utility-scale renewables and storage will provide the backbone for our renewable energy system. Clear guidance to industry on where it is best to site new projects – which aren't already in the pipeline – can ensure there is proper consultation and engagement with communities and streamlined delivery.

### Drivers



Renewable electricity

### Delivery



Federal government



State governments

### Status



New initiative

### Benefits



Good jobs



Empowered communities



Fast and fair development

The federal government can partner with states and territories to undertake a detailed national mapping and planning exercise to identify feasible and appropriate priority areas for the delivery of new renewable energy infrastructure, by the end of 2025. This should take into account environmental, social, cultural and network impacts of siting any new infrastructure, and help direct development activity to suitable areas while reducing upfront costs and development timeframes. Once suitable areas have been identified for inclusion on the Map, both levels of government can provide expedited planning approval for renewable energy projects that meet set delivery standards.

The National Clean Power Map builds on existing plans for Renewable Energy Zones and state renewable energy targets. Consultation processes will support communities that want renewable energy in their regions to put forward proposals for new renewable energy infrastructure, in line with community-led hosting of this infrastructure (see p. 35).



## Require a regional approach to benefits sharing

Regional benefit sharing fosters collaboration and integration by multiple projects or companies when providing benefits to communities. This helps to maximise the reach and effectiveness of benefits provided by energy companies, and ensure they genuinely address high priority community needs.

### Drivers



Renewable electricity

### Delivery



State governments

### Status



Commenced in some locations

### Benefits



Empowered communities



Better quality of life



Fast and fair development

State governments can set up the architecture for a [regional approach to benefit sharing](#) for communities hosting significant renewable energy infrastructure – particularly those in Renewable Energy Zones and adjacent to Offshore Wind Zones. These regional benefits sharing frameworks can prioritise community outcomes like sustained lower energy prices; provision of ongoing physical and mental health, education, youth and community services; and infrastructure improvements addressing locally-identified needs. A better approach to sharing the benefits of new energy projects will help to foster community and social licence for these important developments.



## POLICIES TO EXPAND OUR RENEWABLE ELECTRICITY GRID BACKED BY STORAGE

## Enable community-led hosting of renewable energy infrastructure

At the moment, the process of choosing where utility-scale wind and solar projects should go is very top-down, being mostly determined by project proponents and governments. This can leave communities feeling disempowered and – in some cases – foster opposition to projects.

**Drivers**

Renewable electricity

**Delivery**

State governments



Local governments

**Status**

New initiative

**Benefits**

Good jobs



Empowered communities



Fast and fair development

State governments can establish processes to call for community-led submissions and proposals on where renewable energy infrastructure and storage projects should be located. This could be done in collaboration with local governments, to identify communities or regions which are keen to host new energy infrastructure and share in the benefits. It could also involve business and community groups to identify commercial, industrial and large-scale community sites which are suitable for hosting rooftop solar at scale.

As part of this initiative, federal or state governments can fund Community Energy Coordinators in local government areas within Renewable Energy Zones or identified as suitable through the National Clean Power Map. These coordinators would be a dedicated contact point for project proponents and an accessible liaison for community members, helping to increase dialogue, information and knowledge sharing about the design and delivery of new energy infrastructure. Giving communities the opportunity to bid to host renewable energy projects and have more say upfront in what sorts of infrastructure they'd like to see will help build social licence, while also helping proponents choose locations that work for everyone.






## Boost the grid with 'virtual transmission'

Delivering a fully-renewable energy grid will require boosting our capacity to move energy around from where it is created, to where it will be used. Virtual transmission involves using specially designed battery energy storage systems as substitutes for traditional transmission infrastructure to offer a mix of capacity, services and grid stabilisation.

### Drivers

 Renewable electricity


### Delivery

 Federal government


 State governments


 Local governments

### Status

 Builds on existing initiatives

### Benefits

 More affordable, reliable energy

 Fast and fair development

Virtual transmission can help address network congestion issues on existing transmission lines, and reduce or avoid the need for curtailing renewable inputs to the grid at peak generation times. Australia's energy regulators can move beyond identifying specific transmission line project needs in energy system planning, to identifying areas of network congestion and additional grid capacity requirements. This updated approach could be reflected in the next Integrated System Plan from the Australian Energy Market Operator, due in 2026. Energy providers would then be able to bid into the market to address these needs with their proposed range of solutions, including virtual transmission options. This would help ensure network costs are kept as low as possible, while we build out a cleaner and more reliable energy grid.

The delivery of around 5,000 community batteries as modelled in Climate Council's pathway (see p. 12) would be one practical step in this direction. Charging batteries during the day reduces issues with network congestion at times of peak supply, to then help meet periods of peak demand.

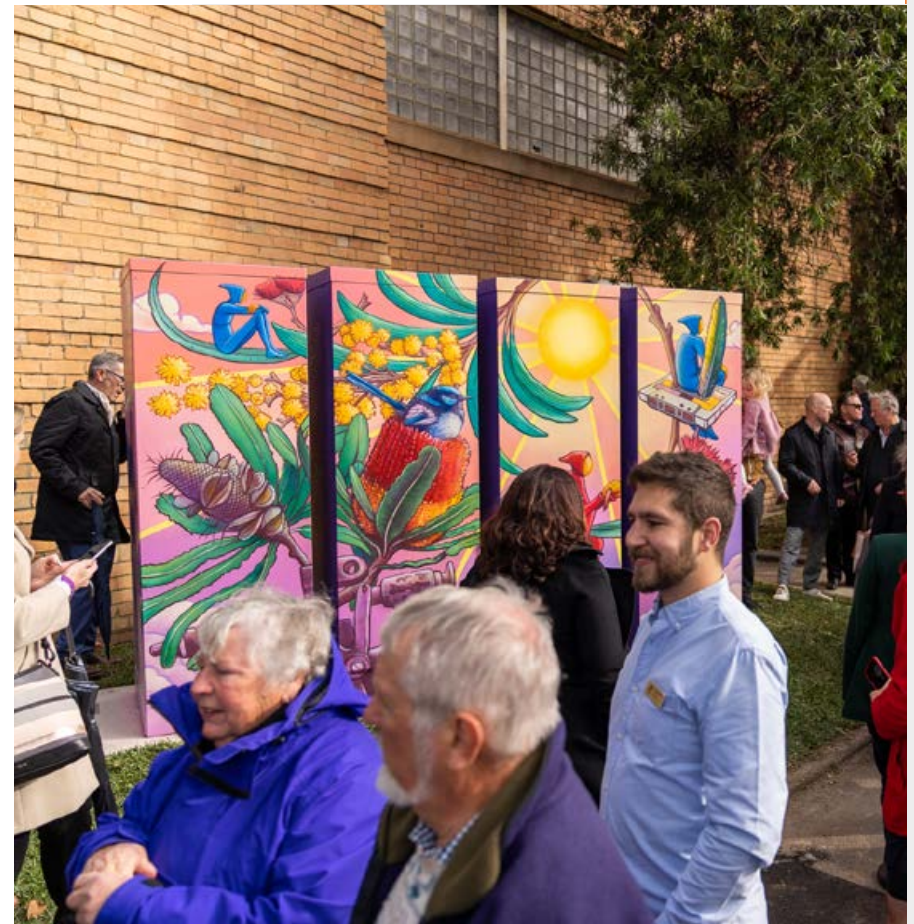


Image: Yarra community battery increases the accessibility and availability of renewable energy to the neighbourhood of Fitzroy North Victoria.

## POLICIES TO EXPAND OUR RENEWABLE ELECTRICITY GRID BACKED BY STORAGE

## Require recycling of renewable energy equipment

Wind and solar will help us create abundant renewable energy so we can slash climate pollution from fossil fuels. Renewable energy equipment, like solar panels, wind turbines and lithium batteries, have an environmental footprint of their own that we should seek to minimise as we use these products. Fortunately, much of the material that goes into producing such equipment can be recycled — whether within the energy sector, or beyond it.

### Drivers



Renewable electricity

### Delivery



Federal government



Local governments

### Status



New initiative

### Benefits



Good jobs



Empowered communities



Fast and fair development



Healthier environment

The federal government can kick-start a domestic recycling industry for renewable energy equipment that have reached end of life by introducing a product stewardship scheme by 2025, like those in the European Union and some parts of the United States. This would involve manufacturers and suppliers of renewable energy equipment being charged a levy to cover the cost of end-of-life collection and recycling of materials. The levy could initially be set at a rate which can cover costs for past installed capacity and new installations, spreading this across the large number of upcoming equipment purchases. There is a significant amount of renewable energy equipment that will reach end of life in the coming decade from Australia's first wave of household solar installations, which will need to be collected and recycled to avoid waste and climate pollution. Funding from the levy would subsidise the cost of recycling renewable energy materials in Australia into other usable goods, so these are more affordable for buyers.

State governments can support the delivery of effective product stewardship and recycling arrangements by banning renewable energy equipment from disposal in landfills, like Victoria has. The federal government could also ban the export of renewable energy waste without prior processing, as it has with other recyclable materials. This would ensure manufacturers and suppliers uphold their stewardship responsibilities, and create further economic incentives for recycling and reusing as much as possible. Recycling and reusing materials like steel, glass, aluminium and rare metals from renewable energy equipment has the added bonus of reducing climate pollution from these industries, which would otherwise come from producing new materials.

## Develop a Strategic Supply Stability Initiative

The global shift towards renewable energy is creating unprecedented supply chain pressures and challenges in securing new wind, solar and storage infrastructure. Australia is competing with many other countries for materials and equipment. Developing renewable energy supply chains that are more diverse also better protects against international instability and other future risks. Australia urgently needs stronger and better supply chains for the main components of our renewable energy switch, so that we can accelerate delivering it.

### Drivers



Renewable electricity

### Delivery



Federal government

### Status



New initiative

### Benefits



Good jobs



Competitive businesses



Fast and fair development

The renewable energy supply chain has multiple stages, spanning **upstream** resource extraction and raw materials processing, **midstream** component production and assembly, and **downstream** sales, installation and end-of-life recycling. Australia is already an active participant in the upstream resource extraction, being in the top three providers globally of raw resource inputs for batteries, solar panels and wind turbines (OECD 2023).

As the Australian Government's [Critical Minerals Strategy](#) highlights our skilled workforce and stable, attractive business environment means we're also well-placed to move up the value chain and do much more processing of these raw materials. Midstream component production and some types of assembly are unlikely to fall within our national comparative advantage. However, regional allies like Thailand, Indonesia and Vietnam are rapidly scaling up their own manufacturing capability and industrial strengths in these areas.

With the right policies and approach, Australia can scale up our role in downstream stages like installation and end-of-life recycling, both at home and throughout the region. We do not need to build an end-to-end renewable energy supply chain exclusively within Australia, but there is a strong opportunity to establish new relationships and channels of supply within our near region that address global competition and geopolitical challenges.

Different parts of government are working on aspects of supply chain and renewable energy industry development. These strands can be brought together under a Strategic Supply Stability Initiative coordinated between national agencies responsible for foreign affairs, trade, industry and energy. Key components could include:

- › Expanding strategic concessional and/or equity financing for projects that grow Australia's upstream renewable energy materials processing capability, building on the modest investments announced so far through the [Critical Minerals Facility](#) and the [National Reconstruction Fund](#).
- › Developing strategic government partnerships with other countries in the Asia-Pacific region pursuing the development of midstream production and assembly capabilities, and actively facilitating business-to-business offtake agreements. The Supply Chain Resilience Initiative with India and Japan and the Australia-United States Taskforce on Critical Minerals are good examples of this approach. These could be built on with partnerships with countries like Thailand with a strong manufacturing base and clear agenda to grow renewable energy materials manufacturing.



## Develop a Strategic Supply Stability Initiative (Cont.)

- › Streamlining and clarifying the application of competition, consumer and corporation laws so that companies can engage in collective procurement or shared supply arrangements that support the delivery of renewable energy infrastructure. The Australian Competition and Consumer Commission [already allows companies to apply for an exemption](#) to competition laws where they can demonstrate public benefits outweigh any risks. This could pave the way for companies to engage in collective procurement for renewable energy materials that help them achieve scale in highly competitive purchasing environments, and develop innovative procurement models that deliver more reliable, ongoing pipelines of equipment.
- › Investing in common user infrastructure that addresses key renewable energy supply chain roadblocks. In particular, a global shortage of specialised turbine installation ships has been identified as a likely obstacle to the rapid development of Australia's offshore wind industry. High demand for these ships in other markets and the long distances they must travel to provide services in Australia makes it challenging for our industry to access this essential infrastructure. The federal government could leverage Australia's local shipbuilding expertise in places like Western Australia and South Australia to deliver one or more specialised ships as common user infrastructure for the growing renewables industry, and support specialised manufacturing industries and jobs at home.





## POLICIES TO ELECTRIFY INDUSTRY AND DRIVE THE SWITCH TO ZERO-EMISSION FUELS

Australia is entering a new era for our national economy, as the world cuts climate pollution and there is massive growing demand for zero carbon products to replace the fossil fuels we export. Just like we once shifted from an economy centred on agriculture to one boosted by fossil fuel resources, now we are building out the renewable energy and clean manufacturing that will power our nation's prosperity for generations to come.

| POLICY INITIATIVE                          | SECTOR BARRIERS ADDRESSED |                             |                    |                              |                       |
|--|---------------------------|-----------------------------|--------------------|------------------------------|-----------------------|
|  | Technology readiness      | Investment/market readiness | Land use conflicts | Community and social licence | Regulatory incentives |
| Industry Energy Efficiency program         |                           | ✓                           |                    |                              |                       |
| Renewable Energy Industrial Precincts      |                           | ✓                           | ✓                  | ✓                            |                       |
| Hydrogen production credits                | ✓                         | ✓                           |                    |                              | ✓                     |
| Further strengthen the Safeguard Mechanism |                           | ✓                           | ✓                  | ✓                            |                       |
| Deal with methane from coal mines          |                           |                             | ✓                  | ✓                            | ✓                     |
| Fix our national environment law           |                           |                             | ✓                  | ✓                            | ✓                     |
| End offshore oil and gas exploration       |                           |                             | ✓                  |                              | ✓                     |
| Grow strategic new clean industries        | ✓                         | ✓                           |                    | ✓                            | ✓                     |

## POLICIES TO ELECTRIFY INDUSTRY AND DRIVE THE SWITCH TO ZERO-EMISSION FUELS

## Establish an Industry Energy Efficiency Initiative

Industry is Australia's single biggest energy user, with manufacturing and mining together accounting for more than a quarter of all domestic energy demand (ABS 2023). There are lots of proven, commercially-ready options for improving how industry uses energy, both by switching from expensive and inefficient fossil gas to cleaner fuels, and upgrading to efficient new equipment or technologies. As gas bills keep rising, making this switch can protect the viability of local industries while also cutting climate pollution.

### Drivers



Energy efficiency

### Delivery



Federal government

### Status



Builds on existing initiatives

### Benefits



More affordable, reliable energy



Competitive businesses



Cleaner air



Fast and fair development

The federal government has already allocated initial funding to support industrial facilities to adopt new lower emissions technologies and renewable energy solutions. This includes \$400 million through the *Powering the Regions Fund – Industrial Transformation Stream*, and a further \$600 million through the *Powering the Regions Fund – Safeguard Transformation Stream*. The federal government can build on these initiatives with further dedicated funding to support industrial energy efficiency.



An Industry Energy Efficiency Initiative can identify best-practice energy efficiency technologies and solutions available in key sectors, and proactively engage with industrial facilities about adopting these. Facilities can then bid for grants on a reverse-auction basis to deliver improvements at the lowest cost. So industrial businesses are making best use of available government funding, and rapidly driving learning across industry about effective and affordable energy efficiency measures.

The Clean Energy Finance Corporation should be a key participant in this policy. Commercial banks and investors could also draw on insights from this initiative to inform their financing of industrial upgrades and investment in new, lower and zero-emission technologies. As most industrial upgrades are funded by the private sector, providing high quality information on available options and best practice will ensure this investment is channelled into upgrades that deliver the best outcomes for companies, our energy system and environment.



## Create Renewable Energy Industrial Precincts

Places like Townsville and Gladstone in Queensland, the Pilbara and Collie in Western Australia and the Hunter and Illawarra in New South Wales have long-established industries and a deep skills base in sectors like manufacturing and mining. These communities can power Australia’s next phase of zero-emission industry by setting up Renewable Energy Industrial Precincts that pool access to affordable, renewable energy and other high quality infrastructure.


### Drivers

-  Renewable electricity
-  Electrification

### Delivery

-  Federal government
-  State governments

### Status

-  Builds on existing initiatives

### Benefits

-  Good jobs
-  More affordable, reliable energy
-  Competitive businesses
-  Fast and fair development

Across the country, industrial activity is already often clustered around energy resources and shared user infrastructure like ports and rail. Renewable Energy Industrial Precincts proactively mirror this approach by bringing big industrial energy users together in places where affordable renewable energy can be provided in abundance. Cheap energy can help make existing industrial businesses more profitable and competitive, while also attracting new businesses that create more local jobs.

Federal and state governments can collaborate to create Renewable Energy Industrial Precincts in regions with a strong existing manufacturing and skills base, and high renewable energy potential. Development of these precincts can prioritise the re-purposing of brownfield industrial sites and the creation of good new jobs in regional communities. When these precincts are developed as a collaboration between government, industry and renewable energy providers, they can match energy suppliers with new energy customers in key strategic industries to effectively unlock private investment at both ends.

Identification of priority locations for Renewable Energy Industrial Precincts could be done as part of developing the National Clean Power Map (see p. 33), and delivery should be co-designed with local communities, unions and industry. Creating such precincts would also help industrial businesses better share knowledge and best practice on their path to zero emissions, helped along by programs like the Industry Energy Efficiency Initiative (see p. 41).

## POLICIES TO ELECTRIFY INDUSTRY AND DRIVE THE SWITCH TO ZERO-EMISSION FUELS

## Boost hydrogen production credits to meet industry demand

Renewable hydrogen made with renewable energy is an essential input for clean Australian manufacturing. It can replace polluting fossil gas in a range of industrial processes like steelmaking, production of chemicals, fertilisers, plastics and where gas is used as a feedstock. With renewable hydrogen, Australia can manufacture more goods cleanly at home, cutting climate pollution here and in other countries, and reducing the need for fossil gas exports.

### Drivers



Switch to zero-emission fuels

### Delivery



Federal government

### Status



Builds on existing initiatives

### Benefits



Good jobs



More affordable, reliable energy



Competitive businesses



Fast and fair development

More research is needed to understand the hydrogen economy, including its interaction with our climate system. The federal government can invest in research and development to explore both its role in chemical reactions in the atmosphere, and its optimal deployment pathways (see Pearman and Prather 2020).

The federal government established the Hydrogen Headstart program as an initial step towards growing domestic hydrogen manufacturing. Under the program, companies bid in a reverse auction to receive hydrogen production credits. These credits cover the gap between the current cost of production for renewable hydrogen and its sale price; making more supply available for local users at a more affordable price. Spending on the scheme is capped at \$2 billion.

The federal government can boost this scheme by setting targets for the production of renewable hydrogen aligned with a strong pathway for industrial decarbonisation and onshore manufacturing of zero-emission goods, and increasing funding to support this. An upfront investment this decade in establishing a strong renewable hydrogen industry in Australia will pay huge long-term dividends by enabling more onshore clean manufacturing and new export industries to drive our prosperity as the world keeps cutting climate pollution in the 2030s and beyond.



**Image:** Technology steelmaking process (HYBRIT) produced the world's first ever fossil-fuel-free steel back in 2020, and delivered a first shipment of "green steel" to Volvo in August 2021 (Recharge 2022).





## Strengthen the Safeguard Mechanism to deliver further cuts to climate pollution

There are 215 industrial facilities that produce almost a third of Australia's harmful climate pollution. In 2023, the federal government took an important step forward by improving the national Safeguard Mechanism policy to require these emitters to cut their pollution each year. But there is more to do if this policy is to drive the industrial transformation we need to genuinely and permanently cut climate pollution.


### Drivers

 Electrification


 Switch to zero-emission fuels

 Phase out fossil fuel extraction

### Delivery

 Federal government


### Status

 Builds on existing initiatives

### Benefits

 Competitive businesses

 Cleaner air

 Fast and fair development

### Deliver more real cuts to climate pollution

At the moment, reductions in climate pollution under the Safeguard Mechanism are estimated on a net basis, with companies allowed to use unlimited Australian Carbon Credit Units (ACCUs) – known as offsets – to achieve their annual targets. Offsets are no substitute for reducing or eliminating climate pollution from fossil fuels at the source, and should be used as a last resort in limited instances. However, the federal government has estimated that less than half of the cuts to climate pollution expected under the Safeguard Mechanism by 2030 will come from genuine on-site abatement. Companies are projected to rely on offsets to deal with 124 million tonnes of harmful emissions (DCCEEW 2023a). That's equivalent to the climate pollution from the combined populations of Sydney and Brisbane.<sup>14</sup>

The scheduled review of this scheme's settings in 2026-27 is an opportunity to further strengthen the Safeguard Mechanism so it drives more genuine, onsite cuts to climate pollution. The federal government can update the rules so that facilities are required to meet a minimum percentage of their annual emissions reduction targets through direct, onsite action. This will incentivise more investment in technologies and renewable energy upgrades that genuinely and permanently reduce industrial emissions.

The use of ACCUs can also be phased out of the Safeguard Mechanism from this time. Limiting facilities to only use Safeguard Mechanism Credits would ensure that credits come from permanent and real cuts to climate pollution within the industrial sector. This would also incentivise Safeguard Mechanism facilities to keep cutting pollution below their baselines where possible to take advantage of increased demand for credits created within the scheme.

### Expand the range of facilities covered

The 2026-27 review is also an opportunity to cut more climate pollution by building on the Safeguard Mechanism's successes to expand its coverage. This can include:

- › Lowering the threshold for facilities covered by the Safeguard Mechanism to 25,000 tonnes of CO<sub>2</sub>e, from the current limit of 100,000 tonnes. This is the current facility-level threshold for reporting emissions under the *National Greenhouse and Energy Reporting Scheme*.
- › Broadening the scheme to properly cover climate pollution from electricity. This could be achieved either by regulating electricity generation facilities as individual Safeguard Mechanism entities, or by regulating industrial facilities' climate pollution from their use of electricity (Scope 2 emissions).

<sup>14</sup> Climate Council calculation based on emissions per capita of 18 million tonnes CO<sub>2</sub>e, as indicated in DCCEEW, 2023a.

## POLICIES TO ELECTRIFY INDUSTRY AND DRIVE THE SWITCH TO ZERO-EMISSION FUELS

## Deal with methane from coal mines

Fugitive emissions (losses or leaks of gases like methane) from Australia's coal mines are a significant source of climate pollution on top of that produced when coal is burned for energy. There are some mines in Australia that emit significant fugitive emissions, well above the industry average. Requiring Australia's 'gassiest' mines to remove this climate pollution or close will help reduce pollution overall as we replace more and more of these energy sources.

## Drivers



Phase out fossil fuel extraction

## Delivery



Federal government

## Status



Builds on existing initiatives

## Benefits



Cleaner air

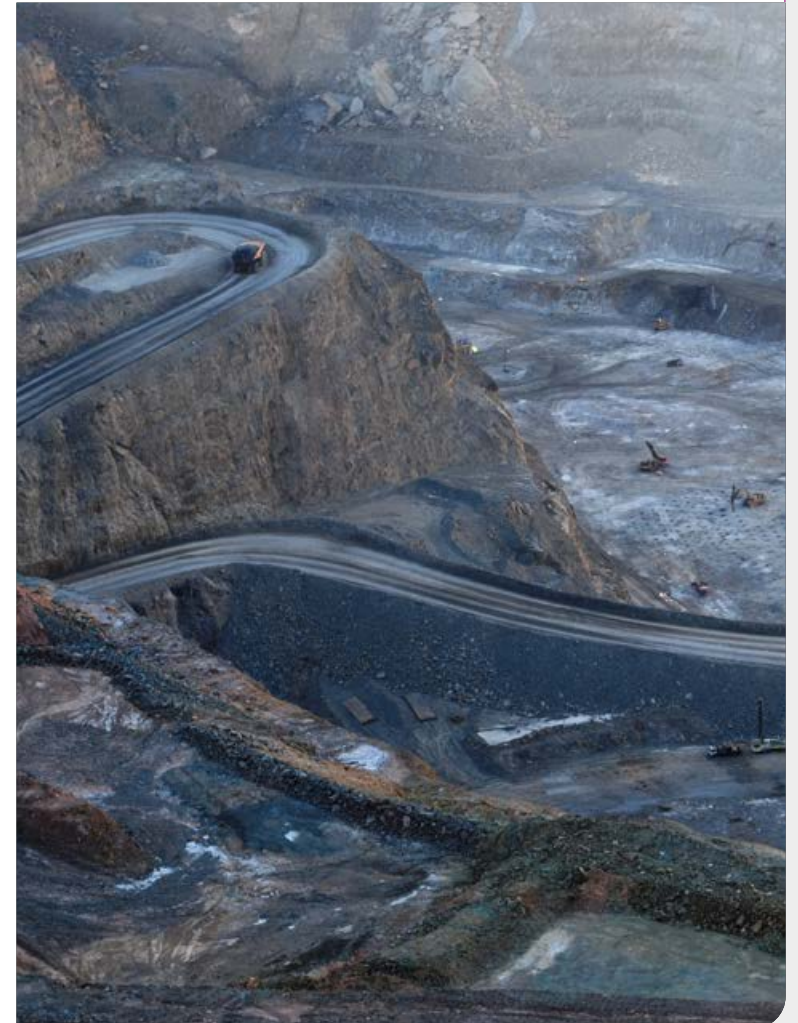


Healthier environment

In addition to stopping the approval of new and expanding coal and gas projects, requiring existing mines to manage their fugitive emissions will reduce the impact of fossil fuels. Coal mines like Appin and Tahmoor in New South Wales and Capcoal and Moranbah in Queensland have an emissions intensity that's several times higher than many other mines. This means they produce far more climate pollution for every tonne of coal they extract.

These and other big-emitting mines in Australia should be required to reduce their methane emissions at least down to the industry average by implementing onsite technologies and practices that are already available. This includes using drainage to remove CO<sub>2</sub> from underground mines, improved sealing of boreholes and pipelines, and using ventilation air methane thermal oxidizers to deal with methane.



This requirement could be implemented within the Safeguard Mechanism once accurate measurement and reporting arrangements are in place for methane. These mines should not be permitted to use offsets or credits to reduce their methane. The huge scale of these fugitive emissions demands genuine and permanent solutions. With global demand for coal rapidly declining, these high-polluting mines should be required to achieve these reductions in their climate pollution by 2030, or close.




## Fix our national environment law

Australia’s national environment law is more than 20 years old, and isn’t set up to respond to the big environmental challenges we now face. Climate change is the biggest threat to our natural environment yet the *Environment Protection and Biodiversity Conservation Act* does not deal with climate change or consider the harmful climate pollution that causes so much damage when assessing new projects. It needs to be replaced with a modern environment law that protects our precious places today, while helping accelerate cuts to climate pollution to avoid further environmental damage.


### Drivers

-  Renewable electricity
-  Phase out fossil fuel extraction





### Delivery

-  Federal government

### Status

-  Builds on existing initiatives

### Benefits

-  Good jobs
-  Cleaner air
-  Healthier environment
-  Fast and fair development

Australia needs a national environment law that says an efficient yes to responsible renewable energy and clean industry projects which will power the next era of our prosperity. It also needs to be set up to say no to high-polluting projects that cause more climate harm – like coal, oil and gas projects. These twin objectives can be achieved by putting climate change firmly at the centre of a new national environment law. This can be achieved by directly assessing the greenhouse gas emissions impacts of all proposed projects, regardless of what sector or industry they’re in. Positive weightings can be provided in the approvals process for renewable energy and industry projects that cut climate pollution, with negative weightings for projects that pollute. This would directly shift industry incentives towards delivering projects with lower or zero emissions to build a new clean industrial base.

Stopping the approval of new and expanded coal and gas projects would deliver immediate benefits in reducing climate pollution in Australia. By 2030, new and expanded coal mines are expected to produce approximately 9 million tonnes a year of fugitive emissions alone. Any new or expanded project would also result in billions of tonnes of harmful climate pollution released when these fossil fuels are burned overseas. The less climate pollution that’s added – here or overseas – the better for Australian people and places.





## POLICIES TO ELECTRIFY INDUSTRY AND DRIVE THE SWITCH TO ZERO-EMISSION FUELS

## End oil and gas exploration

Securing a licence to explore for oil and gas is one of the earliest stages in fossil fuel development. It allows corporations to identify mineral reserves they can then exploit. Major fossil fuel corporations continue to explore Australia's offshore waters and onshore basins for new fossil fuel deposits at the same time they publicly promise to "reach net zero emissions by 2050". The two actions are completely incompatible with each other.

**Drivers**

Phase out fossil fuel extraction

**Delivery**

Federal government

**Status**

New initiative

**Benefits**

Healthier environment



Fast and fair development

The federal government runs an annual process for releasing licences to explore for oil and gas in Commonwealth waters. In 2022 alone, the Albanese Government released 46,758 square kilometres of acreage for exploration off the coasts of Western Australia, the Northern Territory and Victoria (DISR 2022). The government can cease issuing these exploration licences, recognising that continued exploration is unnecessary as the world eliminates climate pollution from coal, oil and gas.

Burning existing global fossil fuels supplies would tip the world over the 1.5°C long-term average temperature goal referred to in the Paris Agreement (IPCC 2023). These exploration licences relate to public marine environments managed by the government on behalf of the Australian people. It is entirely within its power to choose to grant or not – there is no legislative or other requirement to continuously make new acreage available.

State governments can also stop offering new exploration licences for onshore oil and gas exploration, and all joint industry exploration activity carried out by government agencies like the CSIRO and state-based resources offices should cease. This funding and capability can be repurposed to support activities enabling the roll out of more renewable energy, like the development of Australia's National Clean Power Map (p. 33).

Ending exploration for new oil and gas will send a clear message to investors and communities that Australia's fossil fuel era is over, and we are going all-in on renewable energy and clean industry alternatives. This will help direct investment, skilled workers and policy effort where it is most needed now. It is also consistent with the international agreements that Australia is a signatory to, including the landmark decision reached at the 2023 United Nations global climate summit (COP28) where almost 200 countries – including Australia – formally agreed to commence a transition away from fossil fuels.



## Grow strategic clean industries

Australia produces a relatively small amount of processed products, like steel (approximately 5.3 million tonnes a year), compared to the amount of raw iron ore we dig up and export (approximately 932 million tonnes a year). We need to grow industries that can thrive and create new jobs in a zero-emission marketplace. We can do this by developing clean industries that are adjacent to what Australia is already good at producing — like minerals — while leveraging Australia's huge advantage in renewable energy.

### Drivers



Phase out fossil fuel extraction

### Delivery



Federal government



State governments

### Status



Builds on existing initiatives

### Benefits



Good jobs



Competitive businesses



Cleaner air



Fast and fair development

Government programs are beginning to target new green industries, particularly in critical minerals — for example through the [Critical Minerals Facility](#) as part of the [Critical Minerals Strategy](#). Shifting mining efforts from polluting coal, oil and gas to the minerals needed to support the global shift to renewable energy is a positive step. But if all these minerals get shipped directly offshore, they may be fed into polluting production processes in countries with poorer access to renewable energy. At the same time, Australia would miss out on the opportunity to use our renewable resources to produce green products that sell for a premium.

Governments can focus on growing industries within Australia that leverage our renewable capacity to produce green metals. This could be done through the [National Reconstruction Fund](#), which already has \$3 billion budgeted towards low-emission technologies in metals production. The government can also expand strategic concessional and equity financing for projects that grow Australia's upstream renewable energy materials processing capability (see p. 38 above for more detail).

The federal government can also set targets for the share of key products like iron, steel, alumina, ammonia and urea fertiliser produced with zero-emission inputs by 2030, and at regular intervals beyond. Targets would be set to track increasing adoption of new green technologies. A 'green production credit' in the form of a tax credit or contract for difference underwriting can be provided to incentivise contributions towards the green products target. This would help attract investment by new industry entrants. Further incentives could be stacked if investments grow employment opportunities in communities affected by the move away from fossil fuels.

## POLICIES TO ACCELERATE OUR MOVE TO SHARED, ACTIVE AND ELECTRIC TRANSPORT

Shifting the way people get around (mode shift) is the best and fastest way to reduce transport pollution in the years to 2030. By moving from road transport powered by fossil fuels to shared and active transport powered by renewable energy wherever possible, we can cut climate pollution while also improving traffic congestion, air quality, road safety and the cost of living.

| POLICY INITIATIVE                         | SECTOR BARRIERS ADDRESSED                  |                                      |        |                       |                       |                        |
|---|--|--------------------------------------|--------|-----------------------|-----------------------|------------------------|
|   | Availability and quality of infrastructure | Availability and quality of services | Safety | Community perceptions | Regulatory incentives | Technology development |
| Mode shift priority in transport planning | ✓  | ✓                                    |        |                       | ✓                     |                        |
| Shared Transport Service Standard         | ✓  | ✓                                    | ✓      | ✓                     |                       |                        |
| Connected, compact and efficient cities   | ✓  | ✓                                    | ✓      |                       | ✓                     |                        |
| Shared and active transport priority      | ✓  | ✓                                    | ✓      | ✓                     |                       |                        |
| Incentives for one less car               |  |                                      |        | ✓                     | ✓                     |                        |
| End date for petrol and diesel car sales  |  |                                      |        |                       | ✓                     |                        |
| Strategic faster rail routes              | ✓  | ✓                                    |        | ✓                     |                       |                        |
| Alternative zero-emission fuels           | ✓  |                                      |        |                       | ✓                     | ✓                      |


## Embed mode shift in all transport sector decarbonisation planning


All levels of government can make enabling and achieving significant mode shift a core objective of transport sector plans to cut climate pollution – for both personal transport and the commercial transport sectors.


### Drivers

 Mode shift


### Delivery

 Federal government


 State governments


 Local governments


### Status

 Commenced in some locations

### Benefits

 Cleaner air

 Better quality of life

 Fast and fair development

The federal government can make mode shift a priority objective of the Net Zero Transport Roadmap and Action Plan under development in 2024. This would include setting both targets and policy directions that enable:

- › a significant shift from private cars to shared and active transport for people living in Australia’s cities
- › major uptake of lower and zero-emission alternatives like rail to replace commercial road and aviation transport powered by polluting oil.

The federal government can update funding arrangements to more proactively fund state and territory transport infrastructure projects that enable increased use of shared and active transport. This would involve setting up dedicated funding pools for state and local governments to pitch shared and active transport initiatives in our cities and major regional centres, like those available for road and bridge projects. As one example, the [Local Roads and Community Infrastructure](#) program could be extended and refocused on active transport projects like better cycle paths, safe road crossings, and filling missing pedestrian links. All road project proposals submitted for federal funding in cities should also be required to incorporate priority infrastructure for shared and active transport, like bus lanes and off-road pedestrian paths.

State governments can develop and fund explicit plans that prioritise actions enabling Australians living in cities to choose shared and active options for repeated, short (less than five kilometres) trips – such as school drop offs, local shopping and visiting community facilities. More than two million trips taken by car every day in Sydney are less than two kilometres, while in Melbourne half of all weekday trips are under 4.7 kilometres and most of these occur in a car (Climate Council 2023b). With better services and infrastructure, many more Australians living in our major cities can choose shared and active transport for many more trips.



## Deliver a Shared Transport Service Standard

Where we have fast, frequent and reliable alternatives to the private car, Australians choose these options for more of their daily trips. However, many of the shared transport options available now in our major cities aren't a genuine alternative when comparing trip length, convenience or quality of experience.

### Drivers



Mode shift

### Delivery



State governments

### Status



New initiative

### Benefits



Better quality of life



Lower costs of living



Cleaner air



Empowered communities

State governments can work towards providing fast, frequent and reliable shared transport services operating at least every 15 minutes within 800 metres of every home from 7am to 7pm within the existing urban footprint of Australia's eight capital cities. This is a level of frequency that allows users to 'turn up and go' without having to navigate timetables. It also provides more options so people can choose trip times that work for them, mirroring the convenience of a private car.

In designing networks to meet this standard, priority should be given to connecting communities directly to rapid transport hubs and high frequency locations to minimise trip length – in addition to links with central business districts.

These services can be provided through a mix of electrified bus, rail, ferry and other shared options. In the years to 2030, delivering better bus services is the top priority as these can be delivered relatively quickly on existing roads. In the longer term, light and commuter rail will also need to play a significant role so planning for new projects needs to start this decade.

All shared transport should be planned and designed with accessibility, inclusivity and the diversity of Australians in mind, such as meeting the Disability Standards for Accessible Public Transport.

Development proposals for new residential projects can be required to address the Shared Transport Service Standard as part of government planning approvals. Incentives – like additional height or floorspace allowances – could be made available to projects that demonstrate they will be sited in locations which meet it.

This would help shape our cities to be more compact and connected (see p. 52) and address the challenge of new developments being delivered in locations far from essential services, forcing residents to be highly dependent on their cars to get around.




## Make our cities better connected, compact and efficient

Australia has some of the lowest population density of any advanced economy, and this is a challenge for providing fast, frequent and reliable shared and active transport options. Making our major cities more connected, compact and efficient is an important underlying enabler for governments to deliver better transport options.

### Drivers

 Mode shift


### Delivery


 State governments


### Status


 Commenced in some locations

### Benefits

 Better quality of life

 Lower costs of living

 Cleaner air

 Empowered communities

State governments can set the objective of delivering at least 70% of new housing and commercial building developments within the established suburbs of major capital cities by making sustainable use of brownfields sites and well-managed increases to density in existing suburban areas. The ACT has adopted this policy as a way of actively shifting the focus of new housing development away from the suburban fringes and towards areas which have better access to transport and other services. Regulatory changes that encourage increasing density such as easing height restrictions.

Parking requirements and excessive heritage restrictions will be necessary to encourage sensible increases in density.

In parallel, both state and local governments can pursue zoning changes that allow a greater mix of appropriate commercial activity in residential areas. Providing more shops, cafes, health care services and childcare centres close to where people live will help reduce the number of trips they need to take outside their neighbourhoods. It is far easier to walk, ride a bike or catch a bus to access life's essentials when these are nearby.



## Design streets and transport networks around shared and active transport first

More than 1,200 Australians died on our roads in 2023. Car traffic congestion costs our cities billions of dollars each year in lost productivity, and noxious emissions from cars contribute to air pollution and health problems. Our car-dependent transport system has created road systems that are clogged by private cars mostly moving a single person at a time, slowing down buses and trams which can move hundreds at once.

### Drivers



Mode shift



Electrification

### Delivery



Federal government



State governments



Local governments

### Status



Commenced in some locations

### Benefits



Better quality of life



Lower costs of living



Cleaner air



Empowered communities

By reshaping our transport system to prioritise shared and active transport, federal, state and local governments can cut climate pollution, and improve everyone's health and quality of life. Governments at all levels can work together to:

#### Make streets friendly for people, not cars:

People who walk, roll or ride often don't feel safe on Australian roads because they are dominated by cars, and there are limited public spaces where people can move around freely without needing to worry about car traffic. Local governments can deliver precincts where pedestrians and bikes have permanent right of way, and where private car use and parking is not supported except for those with accessibility needs. These precincts can be established around commercial and dining precincts, but could also be set up in other community locations such as around schools and sports facilities.

Outside of these specific precincts, Australia's residential neighbourhoods should follow international best practice by reducing speed limits to 30km/h and supporting this with traffic calming measures. This encourages walking and riding to local destinations, especially among children, and reduces road deaths and injuries.

#### Give shared and active transport priority on roads:

State governments can give shared and active transport priority on the major roads needed to travel to and from frequently-visited commercial, service and employment centres, and move between suburbs. Options to deliver this can range from converting car lanes to dedicated spaces for bikes and shared transport, to providing priority signals at intersections and designing new roads that put the safety of those using active modes first. These reforms go hand-in-hand with the *Shared Transport Service Standard* (See p. 51).

#### Create Shared Transport Zones:

A Shared Transport Zone is a designated area within a city – like the central business district – which only shared vehicles are allowed to travel through. State and local governments can implement these zones in our capital cities to encourage people to use shared transport when visiting these areas. Eligible shared transport options could include bus, tram and rail, together with taxis, rideshare and carpooling. Implementation of these zones should commence with high visitation, high congestion areas in major cities where shared transport services are already well established and available.



## Incentivise owning one less car

The average Australian household has two petrol cars in the garage (ABS 2022). We can work towards one of these cars being swapped with an electric vehicle in the future, and the other being replaced by a mix of shared and active transport options.

### Drivers

 Mode shift




### Delivery

 Federal government  
 State governments

### Status

 New initiative

### Benefits

 Lower costs of living  
 Cleaner air  
 Fast and fair development

To encourage households to own one less car, the federal and/or state governments can provide transport incentives for those who make this change. This could include an amount of credit for use on shared transport, or a cash payment equivalent to the cost of an e-bike. In France, owners of older vehicles who choose to hand these back to the government are eligible for a payment of up to \$6,600 to purchase an e-bike (Bremner 2022).<sup>15</sup>

Countries like New Zealand and Belgium also offer incentives through their national tax system for people who regularly ride or use shared transport. Australia's Fringe Benefits Tax exemption arrangements could be expanded to include benefits paid to workers for shared and active transport. Seeing households swap out one car for an ebike and other shared transport options will cut huge amounts of climate pollution, while also significantly reducing people's costs of living with no need to buy petrol, servicing, or pay for a second registration and insurance premium.


## Set an end date for the sale of new petrol and diesel vehicles

Many of the cars in our fleet today will still be on the road well past 2030, with the average Australian car being just over 10 years old (ABS 2021). Around a million new cars are sold every year; in 2023 more than 80% of them were still fully petrol and diesel vehicles. To reach net zero in the years ahead, we need a clear plan for ending the sale of these fossil-fuel powered cars.


### Drivers

 Electrification




### Delivery

 Federal government

### Status

 Builds on existing initiatives

### Benefits

 Lower costs of living  
 Cleaner air  
 Fast and fair development

The federal government can enable industry and communities to plan for the wind down of petrol and diesel cars by setting an end date for their sale in Australia. Based on the pace of vehicle turnover, this date needs to be set no later than 2035 to see Australia have a zero emissions fleet by 2050. This highlights why mode shift to shared and active transport is such an important part of cutting climate pollution in this sector, as turning over our vehicle fleet is a gradual process.

Progress towards ending new petrol and diesel car sales could start with putting strong caps on vehicle pollution. These caps could then be progressively lowered until 100% of new vehicles sold are required to be zero emissions. The European Union, United Kingdom, Canada and some US states are in the process of implementing this approach, with 2035 emerging as a common end date for petrol and diesel vehicles across these communities.

<sup>15</sup> Based on an exchange rate of \$1.65 per Euro.

## Deliver strategic faster rail routes

Australians rely more on planes and cars to move between our cities and regions than most people living in advanced economies, because of a lack of infrastructure and services. This adds to our climate pollution challenge, as well as being expensive and often inconvenient. While high-speed rail is often flagged as a big vision for linking up key cities in Australia, simpler and cheaper upgrades could deliver faster rail connections at a fraction of the cost and time.

### Drivers



Mode shift

### Delivery



Federal government

### Status



Builds on existing initiatives

### Benefits



Lower costs of living

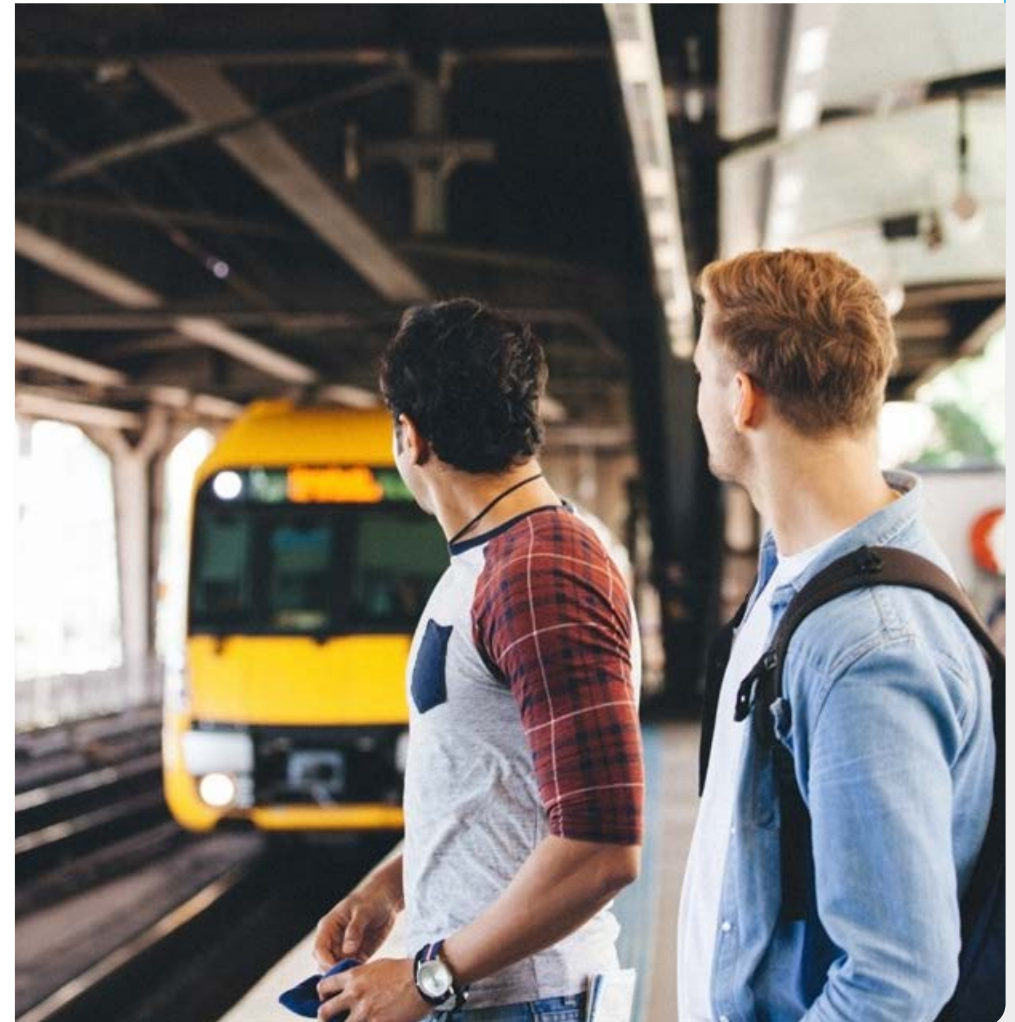


Cleaner air



Fast and fair development

The federal government and key state governments can collaborate to deliver faster rail services along strategic routes which will enable the greatest amount of mode shift away from aviation and roads. The highest national priority routes would be those connecting Melbourne, Sydney, Brisbane and Canberra, which together account for more than a third of all domestic passenger trips by air each year (BITRE 2020). State governments and rail advocacy groups have identified options to progressively build these links through staged track and rolling stock upgrades, which would be a cost effective way to improve rail connections while delivering rapid benefits. Importantly, the focus should be on improving trip times and passenger experience using standard rail technology and as much of the existing network as possible, rather than building an entirely new high speed rail network.





## Increase local production of affordable, alternative low-emission fuels

In the years to 2030, our top priority should be enabling more Australians to choose shared and active transport options for more trips, more often, and continuing to electrify our personal transport fleet. The combination of these will result in significant and rapid cuts to transport pollution.

### Drivers



Switch to zero-emission fuels

### Delivery



Federal government

### Status



Builds on existing initiatives

### Benefits



Competitive businesses



Cleaner air



Fast and fair development

In the longer term, we will need a reliable supply of alternative low-emission fuels for parts of the transport sector where electrification is unlikely to be the answer. This includes sustainable aviation fuel and, potentially, also biodiesel for some heavy transport uses. Work needs to start now to understand the realistic potential for local production of affordable, alternative low-emissions fuels and build the necessary manufacturing supply chains. Reducing Australia's reliance on imported fuels – of any kind – is another practical way to cut transport pollution.

Producing sustainable aviation fuel, biodiesel and other alternative fuels like biomethane all rely on access to biowaste feedstocks, like used cooking oil, agricultural waste, and organic waste. There can be significant overlap in the biowaste sources needed to produce these different fuels. As a first step towards developing a viable low-emission fuels industry in Australia, the federal government can partner with industry to understand the realistic availability of suitable biowaste, and the highest value uses for this to replace polluting fuels in transport and industry. This can inform focused industry development initiatives.

Reducing our reliance on flying and other fuel-intensive ways of travelling will need to be an ongoing priority beyond 2030. This will mean we can balance fuel demand with the expected constrained supply of sustainable alternative fuels.



## POLICIES TO BETTER PROTECT AND RESTORE OUR LANDSCAPES

In the Climate Council's pathway, there are much smaller cuts to climate pollution proposed for agriculture, land and waste by 2030 than other sectors like energy, transport and industry. This reflects the fact that some greenhouse gases from sources like agriculture are harder to avoid or reduce than those produced by burning fossil fuels.

Right now, there are fewer proven and scalable technologies or options in these sectors. Our pathway to 2030 prioritises sectors where great solutions are already available. However, in the 2030s cutting emissions from agriculture, in particular, will become a high priority as this sector will make up a far larger share of Australia's remaining climate pollution. It is important we lay the groundwork now on the solutions and technologies that will be needed in the years to come.


In particular, there are a diverse range of emerging options to address methane emissions from cattle and the use of farming fertilisers. These will need to be further developed, scaled and commercialised this decade so that greater cuts to greenhouse gases can be achieved from the agriculture sector beyond 2030.




## Refine, scale and incentivise uptake of agricultural feed additives and viable delivery models


Cutting greenhouse gases produced by animal digestion is a major challenge for the agriculture sector, and there is significant research and development underway exploring solutions. A consumer-led shift to plant-based diets in some communities and countries is expected to change demand for meat in coming years. However, this is likely to be balanced by demand growth in other countries so other solutions will be needed.

### Drivers


 Avoid biogenic emissions

### Delivery


 Federal government

 State governments


### Status

 Builds on existing initiatives

### Benefits

 Cleaner air

 Healthier environment

 Competitive businesses

Current thinking is that changes to diet or the use of feed additives which reduce the production of methane will be an important solution to greenhouse gases from animal digestion. Some feed additives, like 3-NOP and red algae seaweed, have shown promising results in reducing methane in feedlot beef herds (Hegarty et al. 2021). However, feed additives have not yet been developed that substantially eliminate enteric methane – they only reduce it. More work is also needed to develop affordable distribution methods for these additives that suit both grazing and feedlot cattle operations.

Other solutions are still being researched, like selective breeding for genetic variants of cattle which naturally produce less methane, reformulating animal diets and increasing animal productivity. All of these approaches show promise, but need ongoing research and development. The contribution of different solutions to overall production of greenhouse gases from agriculture is also complicated by the fact that some solutions to reduce methane may bring an increase in other greenhouse gases through production of new foods, feed additives or animal waste (Beauchemin et al. 2022).

As emerging options to cut greenhouse gases from agriculture are further developed, regulatory solutions will likely be required to ensure they are taken up. The federal government can set a clear direction for the sector by bringing large agricultural producers into the Safeguard Mechanism from a set future date such as 2030. This would give the industry time to identify the most feasible and affordable solutions, while providing strong signals about their upcoming necessity.

The [Zero Emissions Agriculture CRC](#) has been established as a collaboration between industry, universities and governments to continue research into all these important areas. Accelerating research and development through this body and other industry collaborations can help bring forward solutions for agriculture which are still nascent today.






## POLICIES TO BETTER PROTECT AND RESTORE OUR LANDSCAPES


## End native forest logging and address deforestation


Each year in Australia, hundreds of thousands of hectares of forest and woody vegetation are cleared. The latest State of the Environment Report noted that between 2015 and 2019, an average of 417,000 hectares was cleared each year, adding up to millions of hectares lost (Australian Government 2022). Logging and clearing is a significant source of land sector emissions and biodiversity loss. Halting this could avoid adding more climate pollution, while increasing the sector's potential as a natural carbon sink.

### Drivers


 Avoid biogenic emissions

### Delivery


 Federal government


 State governments

### Status

 Commenced in some locations

### Benefits

 Cleaner air

 Healthier environment

Some state governments have committed to ending Regional Forest Agreements which have allowed extensive logging in state-owned native forests. Both Victoria and Western Australia ceased native timber harvesting on 1 January 2024, marking an important step forward in responsible land management. Queensland has announced plans to progressively phase out logging in native forests in different regions across the state between 2024 and 2034. New South Wales and Tasmania have not yet committed to end native forest logging in their own jurisdictions, but recent developments in these other states demonstrate what's possible.

New South Wales, Queensland, and Tasmania can fully end native forest logging from 2025, with the federal government then removing Regional Forest Agreements from the national environment law altogether. As part of the new national environment law being developed to replace the *Environment Protection and Biodiversity Conservation Act 1999*, the federal government can also introduce a nationwide ban on logging on publicly-owned land.

Separate to native forest logging, land clearing is a significant source of emissions. Emissions from land clearing were estimated to be 27 Mt CO<sub>2</sub>e in 2023, and are projected to increase to 35 Mt CO<sub>2</sub>e by 2030. Most land clearing in Australia occurs on private land, for expanding and maintaining agricultural land, and, to a lesser extent, for forestry, infrastructure, mining and urban development.

Land clearing was listed as a key threatening process in 2001 under the *Environment Protection and Biodiversity Conservation Act (1999)*. Since 2000, at least 7.7 million hectares that were likely to have been the habitat of threatened species have been cleared (Ward et al. 2019).

Australia's new national environment law should tighten requirements for assessment of any proposed land clearing which would impact nationally protected species — whether those species are the forests and woodlands themselves, or the animals and other wildlife that call them home. State and territory governments must also improve regulations and protected area networks focused on conserving old growth forests, remnant forests and forests with a high biodiversity and carbon storage value. Increased funding and resources are needed to improve enforcement and early intervention.







## Incentivise active restoration of land

Land-based carbon offsets are no substitute for genuine and permanent cuts to pollution from fossil fuels. But high quality offsets will have a limited role to play in helping balance greenhouse gases produced in sectors like agriculture. Australia's rules for creating and using carbon credits can help create positive incentives for private landowners to actively restore land, by increasing overall tree coverage and healthy natural vegetation.


### Drivers

 Avoid biogenic emissions

### Delivery


 Federal government


### Status

 Builds on existing initiatives

### Benefits

 Good jobs

 Cleaner air

 Fast and fair development

At the moment, there are more than 30 different registered methods for creating [Australian Carbon Credit Units](#) (ACCU) under the national scheme run by the Clean Energy Regulator. Some of these methods reward oil and gas companies for dealing with their methane emissions, and aviation and transport firms for improving the efficiency of their fleets. Companies that add climate pollution through digging up or burning fossil fuels should be required to reduce these by regulation, through mechanisms like the Safeguard Mechanism. These ACCU methods can then be abolished, so there is more demand for credits created through activities in the land sector.

At the same time, all ACCU methods based on avoided land clearing and plantation forestry can be abolished to better incentivise the active and enduring restoration of land. Increased demand for ACCUs created through methods like reforestation and afforestation will provide stronger financial incentives for landowners to do this on their properties. The federal government can also remove the current price cap on ACCUs applying under the Safeguard Mechanism to allow the price of these carbon offsets to rise in line with market demand. Together, these changes will ensure there is a positive market value for reforestation and afforestation, which reflects the significant environmental, climate and social values of using land this way.

To further incentivise emissions reductions through restoration and afforestation, the federal government could establish a 'carbon co-op' model, which allows landowners to be rewarded for small-scale restoration efforts. This would allow landowners to 'sell' the rights to the carbon sequestered by small restoration projects to the co-op, who would then aggregate the projects to sell ACCUs on the open market. This would help to address the compliance costs of registering and delivering ACCU projects, which may not otherwise be worthwhile for landowners restoring smaller plots of land.




## POLICIES TO BETTER PROTECT AND RESTORE OUR LANDSCAPES

## Roll out food and garden waste services right around Australia

The waste sector is a modest but important source of greenhouse gases in Australia — and one with a straightforward solution. Diverting food organic and garden organic (FOGO) waste out from landfill to process it in other ways can reduce climate pollution while also creating useful products like bioenergy and nutrient-rich compost.

**Drivers**


 Avoid biogenic emissions

**Delivery**

 State governments


 Local governments

**Status**

 Builds on existing initiatives

**Benefits**

 Good jobs

 Cleaner air

Local governments around Australia are responsible for the collection of household waste. Separating general waste from recycled goods like glass and aluminium is now standard around the country. But less than 40% of local governments also provide a dedicated FOGO collection and recycling service (DCCEEW 2023b). Rolling out FOGO services across the country will generate a separate waste stream that can be recycled in dedicated facilities, rather than becoming more waste in landfills where it produces harmful methane pollution. Composting FOGO waste has been shown to significantly cut climate pollution compared with landfilling. Methods such as anaerobic digestion — which enables the production of biogas — can be even better for the climate by also reducing the need for fossil fuel energy.

State governments can collaborate with local councils to develop combined procurement models and shared user infrastructure for FOGO waste collection and recycling facilities. South Australia's [East Waste](#) enterprise, a collaboration between eight local governments to deliver common waste services, is a positive model for other communities to explore. Increasing FOGO collection and processing services will also create new local jobs, in another example of how cutting climate pollution can help create and grow industries which don't exist at scale today



## POLICIES TO MAKE MORE OF OUR BUILDINGS ELECTRIFIED AND EFFICIENT

Australian homes and buildings can make an important contribution to cutting climate pollution, if we improve their efficiency and power them with the cleanest types of energy. Those living and working in such buildings benefit from them being more comfortable. Those who own or rent the buildings enjoy lower power bills. With the poor quality of housing that we have there are many Australians who stand to benefit from electric, efficient buildings. There are around 10.8 million homes and more than one million commercial buildings in Australia. While not every one of these requires an upgrade, ensuring all our properties are clean and efficient will require a major national retrofit effort.

| POLICY INITIATIVE  | SECTOR BARRIERS ADDRESSED       |                      |                                   |                                 |                       |
|--|---------------------------------|----------------------|-----------------------------------|---------------------------------|-----------------------|
|  | Availability of skilled workers | Retrofitting backlog | Community knowledge and awareness | Misalignment of default options | Regulatory incentives |
| Upskilling key trades  | ✓                               | ✓                    | ✓                                 | ✓                               |                       |
| Enable household efficiency upgrades   |                                 | ✓                    | ✓                                 | ✓                               | ✓                     |
| All-electric new homes and commercial buildings  |                                 |                      | ✓                                 | ✓                               | ✓                     |
| Stronger minimum energy performance standards for residential and commercial buildings |                                 | ✓                    | ✓                                 | ✓                               | ✓                     |
| Expand minimum appliance energy performance standards                                  |                                 |                      | ✓                                 | ✓                               | ✓                     |
| Initiate an orderly wind-down of gas distribution networks                             |                                 |                      |                                   | ✓                               | ✓                     |





## POLICIES TO MAKE MORE OF OUR BUILDINGS ELECTRIFIED AND EFFICIENT


## Upskill trades workers in the building, electric, plumbing and gasfitting industries

Australian tradies are on the frontline of delivering better buildings which are cheaper and cleaner to run. Many of the qualified trades workers doing such home and commercial work are employed by small and medium businesses. These existing workers are set to benefit from a strong pipeline of jobs, if they can be supported to refresh and repurpose their skills for energy efficient and zero-emission building work.

**Drivers**

-  Electrification
-  Energy efficiency

**Delivery**

-  Federal government

**Status**

-  New initiative

**Benefits**

-  Good jobs
-  Competitive businesses
-  Fast and fair development

In most places around Australia, builders, electricians, plumbers and gasfitters are licensed trades. This means that trade workers need to demonstrate they have certain skills and knowledge to work in the industry, and renew their licence to operate every few years. This creates an opportunity to pursue industry-wide upskilling on energy efficiency and zero-emission building. Industry and unions can collaborate to create and deliver appropriate training that builds on these workers' existing skills. All relevant workers can then be required to complete this training by a set date, as a condition of their ongoing licensing.

There is also a particular opportunity to build on the existing skills of Australia's gasfitting workforce so these workers can move into some types of electrical work. Retrofitting millions of Australian homes with electric heating, hot water systems and stoves calls for a big increase in workers with the right skills. The federal government can partner with unions and industry to develop training, which is specifically designed for existing qualified workers moving from the gasfitting to electrical trade. This would ensure workers do not have to re-do training in the areas they are already skilled, while gaining new skills needed to work safely and effectively as an electrician. Ensuring workers and their employers in small and medium businesses get the training they need to play a big role in Australia's national retrofit is a win-win-win for business, consumers and government.









## Enable household efficiency upgrades

There are a range of household upgrades that can significantly improve energy performance, like switching from gas to all-electric, swapping old appliances for the most efficient options, improving thermal performance through insulation, and more. Climate Council (2023c) analysis shows households can start saving on their bills and cut climate pollution when they make these kinds of changes.


### Drivers

-  Electrification
-  Energy efficiency

### Delivery

-  Federal government
-  State governments

### Status

-  Commenced in some locations

### Benefits

-  More affordable, reliable energy
-  Lower costs of living
-  Empowered communities
-  Fast and fair development

The upfront costs of such upgrades can be a significant barrier for those who do not have enough savings or are unable to access affordable financing from a commercial lender. The federal government, Tasmania and the ACT have started using low- and zero-interest loans as one way to help households overcome this hurdle.

For example, in the ACT homeowners and landlords can access a zero-interest loan of up to \$15,000 to pay for a range of renewable energy and efficiency upgrades. They can then repay the loan over a term of up to 10 years using the savings from lower bills. Importantly, this type of household support is also more affordable for governments than direct grants or incentive payments, and so can be provided at a significantly greater scale to help more people. Other states and territories can follow this lead by delivering their own zero-interest loan schemes. These schemes are best targeted to lower income homeowners who may not have access to the upfront funds for property upgrades, and landlords who are less incentivised to invest in cost-saving upgrades. The unimproved land value of the property being upgraded can be a useful means test.

The federal government's initial electrification package will provide low-interest loans via third-party financial providers, but it is only expected to support 110,000 home upgrades. To see more properties upgraded, while avoiding duplicating existing and future state schemes, the federal government can prioritise providing zero-interest financing to social housing providers and other not-for-profits for upgrades across their properties. It can also collaborate with states and territories to finance upgrades to public housing.



## POLICIES TO MAKE MORE OF OUR BUILDINGS ELECTRIFIED AND EFFICIENT


## Deliver all-electric new homes and commercial buildings


Around 170,000 new homes are built each year in Australia; over the coming decades this adds up to millions of new homes. As we mount a big push to retrofit existing properties, we can ensure all new homes and commercial buildings reap the benefits of clean, affordable energy from day one by requiring them to be built with all-electric, efficient appliances.

### Drivers


 Electrification

### Delivery


 Federal government

 State governments


### Status


 Commenced in some locations

### Benefits

 More affordable, reliable energy

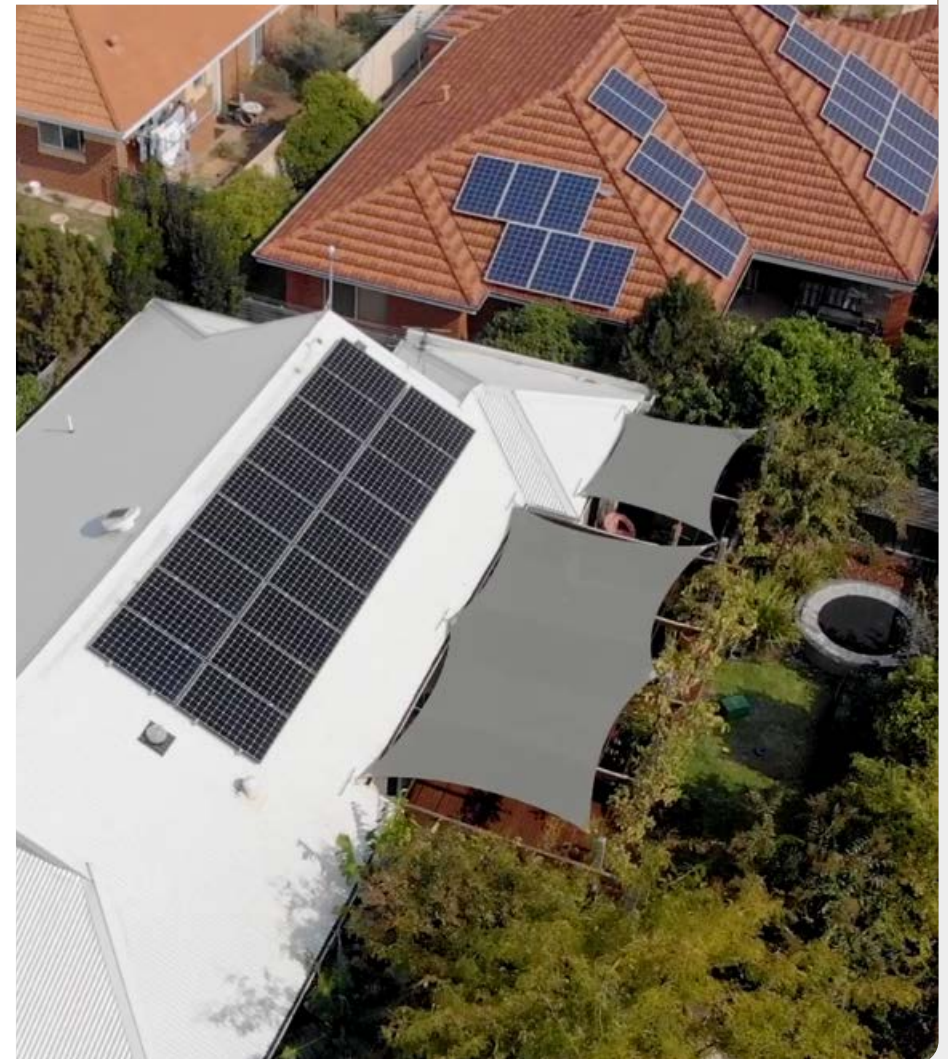
 Lower costs of living

 Empowered communities

 Fast and fair development

Federal and state governments can agree on a national approach and timeframe for requiring all-electric new homes – including apartments – and general commercial buildings around Australia. This requirement can cover both new-build estates and brownfield projects in established areas, and include all-electric appliances as a minimum. Some jurisdictions have already started down this path: the ACT ceased gas connections to new homes in 2023 and Victoria started requiring all-electric builds in January 2024.

Coordinating this step nationally will help ensure that increases in electricity demand from switching buildings off gas can be factored into planning for the broader build of Australia's renewable energy grid that is now underway. Having a clear timeframe for delivering this change will also support planning by workers and businesses on upskilling (see p. 63) and gas network operators and asset owners on accelerated depreciation (see p. 68)



## Set progressively stronger minimum energy performance standards for residential and commercial buildings

Everyone should be able to live and work in properties that are comfortable, healthy and affordable to run. But up to eight million homes were built in Australia before any minimum energy standards existed, and the vast majority of these still have poor energy ratings (Climate Council, 2023a). Internationally, countries like France and Germany have recognised the role of minimum energy performance standards for properties that are sold or leased as a way of gradually raising the bar on our existing building stock.

### Drivers



Energy efficiency

### Delivery



Federal government



State governments

### Status



Commenced in some locations

### Benefits



Good jobs



Lower costs of living



Empowered communities



Fast and fair development

Residential and commercial buildings can be required to meet minimum energy performance standards, which progressively strengthen over time, to drive an ongoing improvement across Australia's homes and commercial buildings. This could commence with all homes sold or rented being required to achieve a 3-star [NatHERS](#) minimum energy rating by the end of 2025, with progressive improvements to bring all homes up to a future proof 'net-zero existing buildings' standard by 2030. This standard can address a range of cost saving upgrades that cut climate pollution, including electrifying homes and installing batteries and solar panels. Specific targets could also be set for commercial buildings using the [NABERS](#) rating system.

Research from [Climateworks \(2023\)](#) highlights that upgrades are most cost-effective when they are done at the same time as other work, such as when a property is being prepared for sale or lease. Having a clear and consistent national minimum standard for energy performance will ensure property owners prioritise improvements that deliver bills savings and improvements in comfort, as well as maximising the number of homes upgraded. People living in rented homes and leasing commercial premises would be the biggest beneficiaries of this change, as landlords are often less willing to undertake upgrades they won't directly benefit from. Design of the standard and its delivery should be aligned with the community sector-led [National Framework for Minimum Energy Efficiency Rental Requirements](#).

Delivery of this standard would be supported by a requirement to disclose the energy performance of properties when they are sold or leased, as is already the case in the ACT. The federal and state governments are collaborating on the development of a National Framework for Disclosure of Residential Energy Efficiency Information. This will enable states and territories to implement their own disclosure requirements in a nationally-consistent way, which all jurisdictions should now do.

Governments can also fund training for qualified assessors to support effective rollout of an energy efficiency disclosure rating scheme. This will require training so those making assessments can conduct accurate blower door tests or read infrared imaging, for example. Federal, state and territory governments can also ensure assessors and assessments are audited, and comply with standards. Audits can ensure ratings are accurate and increase public confidence in the rating scheme.



## POLICIES TO MAKE MORE OF OUR BUILDINGS ELECTRIFIED AND EFFICIENT

## Improve minimum energy performance standards for appliances, including phasing out gas appliances

Every day around Australia, old appliances reach their end of life and need to be replaced. When homeowners or landlords need to replace appliances like stoves and hot water heaters, we should take this opportunity to ensure they upgrade to the cleanest and cheapest-to-run efficient electric options. In addition, making all our existing electrical appliances more efficient can also deliver big savings for households while helping manage energy demand better.

### Drivers



Electrification



Energy efficiency

### Delivery



Federal government

### Status



Builds on existing initiatives

### Benefits



Lower costs of living



Empowered communities



Fast and fair development

Australia has a well established energy rating system for consumer and household products – like air conditioners, dishwashers and lighting. The [Energy Rating](#) system sets minimum energy performance requirements for a range of different products and requires manufacturers to provide consumers with information about how much energy they use.

In the first instance, federal and state energy ministers can coordinate on a national requirement to replace end-of-life gas appliances with more efficient electric alternatives from 2025. This could be implemented by no longer certifying gas appliances under the minimum energy performance standards.<sup>16</sup> While individual states and territories can require replacement with electric appliances within their own jurisdictions – as Victoria has signalled it will do – there is also the opportunity to coordinate a national approach.

Getting this policy in place as soon as possible is important because household appliances can have a lifespan of more than a decade, so every gas cooktop or hot water service sold today will stay in service well into the 2030s.

In addition, minimum energy performance standards for appliances that are already covered by the scheme can be progressively tightened so that manufacturers keep making their products more efficient. This could be done by identifying the most efficient product available in a category, and requiring all other products in that category achieve the same level of efficiency by a set date. Minimum energy standards can also be expanded to a wider range of consumer and household products that aren't yet covered, like ovens and cooktops, game consoles and mobile phones.

<sup>16</sup> Some expansions to the scheme may be required to ensure all gas appliances are phased-out. For example, gas stove-tops are not currently regulated by the scheme.




## Initiate an orderly wind down of gas distribution networks

Gas network operators pass on the cost of running and continually upgrading their distribution networks to gas customers through their bills. The Australian Energy Regulator determines how much of this cost can be passed onto customers over each five-year regulated period. As more and more homes and businesses electrify and leave the gas network, there is a risk that there will be fewer and fewer people that wear this cost.


### Drivers

 Electrification


### Delivery


 Federal government


### Status

 Commenced in some locations

### Benefits

 More affordable, reliable energy

 Cleaner air

 Fast and fair development

This could result in much higher bills for those who are least able to pay them. To prevent this, the federal government can direct the Australian Energy Regulator to require accelerated depreciation of existing gas network assets servicing Australian homes and non-industrial businesses. This would ensure that the infrastructure cost of these network assets is fully written down by a set date – such as 2035 or 2040. This would mean all gas consumers pay a small additional annual charge while there are still lots of users on the network, while avoiding the last users facing much larger costs in future. This approach was adopted in the most recent price determination by the Australian Energy Regulator for the ACT, where the government has commenced a coordinated phase out of gas (AER 2021).

Accelerated depreciation can be paired with clear guidance from the Australian Energy Regulator to gas network operators that non-essential network upgrade costs will no longer be eligible to be recouped through regulated pricing arrangements, discouraging operators from doing them.

This initiative can ensure gas network operators are planning for, and working towards, an end to gas use in homes and most businesses, and do not continue to incur capital costs by building out networks that then have to be recouped through customer bills for longer.



# 4.

Delivering now  
shows what's  
possible by 2035



**In late 2023, the federal government released projections showing Australia is broadly on track to meet our national target of cutting climate pollution by 43% below 2005 levels by 2030 (DCCEEW 2023a). We're well on the way to achieving this off the back of initiatives delivered and well advanced by the Albanese Government during its first term in office.**

This is a strong turnaround from where we were. The last projections released under the former federal government in 2021 forecast climate pollution would be only 30% lower by 2030 (DISR 2021). This shows how focused effort and smart policy can drive real change. It should inspire us to keep going with what we know works — building out our clean economy — so we cut climate pollution by 75% this decade. That is what will keep more Australians safe over time. That is what will lower the costs of living for households and businesses. That is what will build the nation's prosperity for generations to come. That will be a proud legacy.

It is also what will get Australia well on track to reach net zero by 2035 — the next goal we must work towards. This won't be easy, but this Climate Council research shows it is possible if we build on our momentum to drive more change, in more ways, and in more places across our community and economy.

Under the international agreement on climate change that Australia signed onto, countries must provide regular updates about their plans and targets to keep cutting climate pollution towards net zero. The federal government will set our next 'Nationally Determined Contribution' under this agreement within the coming 12 months that spells out how much climate pollution Australia plans to cut by 2035. This research shows we can reduce it by 75% by the end of this decade using proven and readily available technologies and methods. There are two more federal terms of government still to run before 2030, which gives our national leaders the opportunity to keep building on what's already been done.

Australia's next national emissions reduction target should be determined by both what is necessary, and what is possible. Anyone familiar with climate science will understand why it is necessary to do everything we can to protect Australians from worsening climate harms.

Our research shows how much climate pollution can be cut by 2030. If we can cut pollution by 75% by 2030, then we can do even more by 2035. Setting any 2035 target that's lower than what Australia can achieve *this decade* would mean fewer, good jobs for Australian workers. It would mean less competitive Australian industries. It would mean higher costs of living for households and businesses. It would mean higher risks and worsening impacts like bushfires, heatwaves and flooding rains. It would mean worsening degradation of the natural environment and further biodiversity loss. It would mean more lives lost and debilitating physical and mental health outcomes.

By contrast, a necessary and achievable target backed by real action can create new jobs, grow clean industries, improve our quality of life, lower the costs of living, and keep our children safe. Australia's 2035 target must improve on what we know is already possible by 2030 (a 75% cut) and get us closer to ending climate pollution. After all, we have already made so much progress on climate action in two short years. Imagine what we can do in the decade ahead.

**Smart policies and focused effort has delivered real progress over the past two years, and should inspire us to keep going with what we know works.**

# 5.

We have so much to gain by building on today's momentum





**When you set out on a journey, it's only natural to focus on the path ahead. When it's somewhere you've never been before, that path can involve unexpected twists and turns. You might start to worry when you'll ever see the destination, or if you'll make it.**

It's only when we stop for a breather, look around, and glance back that we can truly appreciate how far we've come. This report shows Australia exactly where we're at on the journey to end climate pollution – and what comes next.

It underscores the remarkable shift that's happened towards renewable energy while we continue to plug in and watch the news, recharge our appliances and turn the lights on. We are rebuilding a national grid that already powers 40% of our electricity needs from renewable energy, like solar and wind. More than three million Australian households have already taken back control of their power bills by putting solar on their roof.

It shows the start we've made in transport, as more Australians choose electric when it comes to getting around; whether that's an electric vehicle, bicycle, train or shared taxi service.

It highlights how we can keep existing industries competitive as countries all over the world continue to cut climate pollution, and the incredible opportunities we have in Australia to expand clean industries that meet growing market demands.

In fact, with the progress we've already made, and the policies already in place, Australia is on track to cut climate pollution by more than 40% by the end of the decade. In other words, we're already more than halfway there to achieving the cuts to climate pollution that scientists agree is needed in the 2020s. We're on the right track, but we need to keep going.

The most important job to finish is building out a renewable energy grid. That way, we can meet all of our household and business energy needs without adding more pollution. This can happen as we electrify everything we do, as well as how we get around. It also means we'll be set up to produce the additional renewable energy needed to power new, clean industries that will set up our nation's prosperity for generations to come.

In adopting smart policies we can ensure the benefits of doing so will be felt by more Australians and visible in more communities. Not only in keeping more of us safe from worsening extreme weather, but also in plenty of good jobs being available, more liveable neighbourhoods, and lower costs of living and doing business. These are our choices, and their future.

**Let's seize the decade.**

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