Climate Council of Australia

Submission to:	Australian Future Gas Strategy
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About the Climate Council

The Climate Council is Australia's own independent, evidence-based organisation on climate science, impacts and solutions.

We connect decision-makers, the public and the media to catalyse action at scale, elevate climate stories in the news and shape the conversation on climate consequences and action, at home and abroad.

We advocate for climate policies and solutions that can rapidly drive down emissions, based on the most up-to-date climate science and information.

We do this in partnership with our incredible community: thousands of generous, passionate supporters and donors, who have backed us every step of the way since they crowd-funded our beginning as a non-profit organisation in 2013.

To find out more about the Climate Council's work, visit www.climatecouncil.org.au.

Introduction

Climate Council of Australia welcomes the opportunity to provide input on the Australian Government's Future Gas Strategy.

July 2023 was the world's hottest ever month, and the first month in which the global average temperature rise spiked 1.5 degrees celsius (°C) above pre industrial levels. The Northern Hemisphere's summer was marked by persistent and intense heatwaves across the United States, Southern Europe and China. Massive fires devastated communities in parts of Northern Africa, Greece, Hawaii and Canada. Smoke from the Canadian wildfires blanketed New York City, forcing schools to close and flights to be grounded. Deadly downpours and flash flooding saw lives lost and thousands displaced in Korea and India (Climate Council, 2023).

Now, with an El Niño weather system declared for the Southern Hemisphere and hot, dry conditions expected in Australia over the coming months (BOM, 2023), the extreme weather outlook for summer is grim. Bushfires were already raging on the east coast in November 2023 - a month before the official start of summer - with lives threatened and more than 50 properties lost in Queensland (ABC, 2023). These are the consequences of climate change, driven by burning fossil fuels like gas, that Australians are already experiencing at 1.2°C of warming (Climate Council, 2023). Stated climate commitments from global governments have the world on track not only to exceed the 1.5°C goal of the Paris Agreement, but blow past it, with up to 2.7°C degrees of global temperature rise projected (Climate Action Tracker, 2022).

Every fraction of a degree closer we get to breaching these temperature thresholds increases the risk of escalating climate impacts. This would mean more families uprooted by fires and floods, more communities wilting under extreme heat waves, more damage to iconic ecosystems like the the Great Barrier Reef, and escalating risks to our collective safety and security (Climate Council, 2023).

*"Keeping alive the goal of limiting global warming to 1.5 °C requires the world to come together quickly. The good news is **we know what we need to do – and how to do it.** Our 2023 Net Zero Roadmap, based on the latest data and analysis, shows a path forward."*

- **Faith Birol**, IEA Executive Director

Against this backdrop of escalating climate impacts, the global energy sector is experiencing major shifts. The world is undergoing a new Industrial Revolution, one driven by an urgent need to tackle the climate crisis and grasp the economic advantages of renewable energy. Since 2020, investment in clean energy has risen 40 percent, while demand for coal, oil and gas is expected to peak this decade (IEA 2023). Many developed nations are working to at least halve their emissions by 2030, and this switch away from fossil fuels is reshaping the global economy with major implications and opportunities for Australian industries.

Gas is a fossil fuel responsible for driving harmful climate change around the world. The extraction and processing of gas in Australia releases greenhouse gas emissions, mostly made up of methane, which is around 85 times more potent than carbon dioxide over the short term (IEA, 2021). There are no comparative advantages of using gas over coal. Both are harmful to the climate and our health and well-being (Steffen et al. 2022 in SMH 2020). But Australia has significant comparative advantages in building zero-emissions energy such as wind and solar with storage. We are one of the sunniest and windiest countries in the world, gifting us the potential to massively expand our renewable energy capacity. For future industries to thrive in a net-zero world, they must be supported to move beyond emissions-intensive fossil fuels that are driving the climate crisis.

Both the International Energy Agency (IEA) and the International Panel on Climate Change (IPCC) have made it abundantly clear that any expansion of new fossil fuels is incompatible with limiting warming to 1.5°C (IEA 2021). This is because existing fossil fuel supplies are more than sufficient to tip us over this crucial threshold (IPCC, 2021). What we export internationally as harmful carbon pollution, we import in floods, fires and extreme weather fuelled by climate change. New and expanded gas development in Australia therefore raises the risks of catastrophic climate harm to our communities and environment. We must instead replace all fossil fuels with clean, affordable energy alternatives as soon as possible.

Choices made today by the Australian Government will shape the kind of world that younger Australians inherit; the more we can cut greenhouse gas emissions this decade,

the better the prospects for a safe and thriving future. The Australian Government should be capitalising on our natural advantage by leading the energy transition for our region. This will require actively planning and investing in large-scale clean energy solutions, and taking steps to transition gas out of our energy, transport and industrial systems as soon as possible.

The *Future Gas Strategy* should support this by mapping out a clear pathway for phasing down the use of gas in Australia in a measured but rapid way, and achieve the same for Australia's gas exports to overseas markets. The strategy is an opportunity to be transparent with communities and industry about where, and for how long, gas will be needed into the future, and crucially, where the opportunities lie to rapidly replace it with clean, affordable energy alternatives. The 2023 update to the International Energy Agency's Net Zero Roadmap found that global demand for coal, oil and gas will all peak this decade (IEA, 2023). Forthcoming analysis undertaken by the Climate Council shows that if we take strong action this decade to embrace and accelerate available renewable energy alternatives, domestic demand for gas would fall to as little as 231 PJ/a in 2035 - almost 80 percent less than we use today (see Confidential Appendix). This strategy can lay out the plan for a managed and seamless transition from gas to cleaner and cheaper alternatives - one that sends a clear signal that there is no need for new gas supply, provides policy certainty for industry, markets and investors, and secures good jobs and prosperity for workers and communities.

As we seek to move beyond gas two things will be critical to securing Australia's access to clean, affordable, and reliable power: a massive roll-out of renewable energy projects and infrastructure, and widespread improvements to energy efficiency across households, business and industry. But governments need to lead and coordinate the phase down of gas across our economy, and facilitate both the market conditions and regulatory environment that will attract the billions of dollars in private investment needed to build our rising clean energy industries. In hard-to-abate sectors - such as cement, steel and alumina - government investment in research and development on technology alternatives that can reduce the use of gas is urgently needed.

Planning to extend the use of gas in Australia is already misdirecting critical investment away from the future clean energy economy, in this critical decade when the rapid decarbonisation of our energy system must be prioritised. Since 2003, more than $4 billion in public money has been spent on developing carbon capture and storage (CCS), an unproven technology which still has not been shown to effectively work at scale (TAI, 2021). Another example is the proposed continued use of gas in networks with blue

hydrogen in the mix. This should not be an option and runs against evidence. For example, the UK's National Infrastructure Commission (NIC) recently advised the British Government that hydrogen was not suitable for heating homes and businesses, and it should be ruled out as an option to enable an exclusive focus on switching to electrified heat. The complexity of converting the gas network and homes to hydrogen is another point against the use of blue hydrogen (NIC 2023). False solutions such as these distract and prolong the use of gas, when Australia should be planning the industry's managed exit, and genuinely driving down greenhouse gas emissions from our energy sector.

Boosting renewables, storage and electrification is essential to any effective strategy to combat climate change. This submission demonstrates that, when new energy opportunities are combined with improvements to energy efficiency and other solutions to reduce demand for fossil fuels across households, business and industry, **the future of gas in Australia is small and dwindling.**

Summary of recommendations

Recommendation 1

Climate Council recommends the Australian Government prioritise gas demand reduction in the Future Gas Strategy and all associated policies and initiatives, including through widespread electrification strategies, improving energy efficiency in homes and businesses, and scaling up clean energy alternatives for Australia's industrial sectors. In hard-to-abate sectors - such as cement, steel and alumina - government investment in research and development on technology alternatives that can reduce the use of gas is urgently needed.

The Future Gas Strategy should include policies that maintain energy reliability and improve affordability as the grid transitions away from gas, and promote grid stability through batteries and other renewable energy sources.

Recommendation 2

All new fossil fuel projects increase the risk of more catastrophic climate impacts. As part of the essential effort to hold global warming as close as possible to 1.5°C, Climate Council recommends the Future Gas Strategy set out a clear plan for meeting Australia's energy needs into the future that **does not include** the development of any new gas reserves or operations in Australia.

Recommendation 3

To help Australia efficiently plan and manage our energy transition away from gas, Climate Council recommends the Future Gas Strategy include a pathway for phasing it out, including timeframes for its replacement with alternative clean energy supply across homes, businesses and in electricity generation. This will underpin a managed transition away from gas towards cleaner and cheaper energy sources, while also helping to influence and inform the decarbonisation plans of our international trading partners.

Recommendation 4

The Future Gas Strategy should not fund or provide policy support to false solutions such as CCS, blue hydrogen, offsets or other initiatives which unnecessarily prolong the use of gas in our energy system. Instead, the Future Gas Strategy should promote genuine emissions reductions efforts as we phase down gas production.

The Future Gas Strategy should also establish clear and unambiguous definitions of renewable gases, which limit the use of this term to renewable hydrogen produced with wind or solar energy and a sustainable water source, and biomethane produced through a genuinely low emissions supply chain.

Issue 1: Reducing gas demand

Along the entire gas supply chain, large quantities of methane and other greenhouse gases are produced. This is one of the factors contributing to Australia's high carbon emissions (Climate Council, 2020). Efforts to cut emissions elsewhere in the economy, such as through the ramp-up of clean renewables in the grid, are being dragged down by the continued extraction, processing and burning of gas. In the urgent race to net zero, this means that different parts of our economy are now working against each other, and makes the task of cutting Australia's emissions as steeply and rapidly as possible this decade significantly more difficult.

The Consultation Paper provided by the Department names decarbonising Australia's economy and ensuring energy security, reliability, and affordability as core objectives of the Future Gas Strategy (DISR, 2023). Decreasing overall demand for gas is critical to achieving all of these.

Forthcoming modelling undertaken by the Climate Council (Confidential Appendix), indicates that we can achieve a 100 percent renewable electricity system by 2035, with no further requirement for gas in electricity generation past this time. Across the economy, if other measures are taken to scale up and accelerate clean energy technologies already available today, gas demand could be almost 80 percent lower in 2035 than it was in 2020, up to 91 percent lower by 2045, and completely eliminated by 2050 (Climate Council Analysis, forthcoming).

The Future Gas Strategy presents the Australian Government a significant opportunity to plan for this phase-out of gas across our energy system. The Strategy should prioritise cutting demand for gas across the economy and accelerating the rollout of renewables and storage, to replace all fossil fuels while continuing to meet Australia's energy needs reliably and affordably.

Strategies to reduce gas demand across households, business, and industry

The Australian Government can efficiently reduce gas demand across the economy by rapidly transitioning our electricity grid to 100 percent renewable sources, and improving energy efficiency across households and businesses. Thankfully, these solutions also represent the most readily-available, cost-effective, and high-impact ways to slash household greenhouse gas emissions, cut power bills, and improve health and quality of life for families across the nation. Australians are battling both the climate crisis and a

cost of living crisis. A Future Gas strategy that prioritises gas demand reduction through widespread electrification and improvements to energy efficiency can reduce overall energy use, lower the cost of living, and make households cleaner and safer places to live (Climate Council 2023a).

Coordinating a move to electrify households and businesses through the Future Gas Strategy will also help to direct new investment towards growing Australia's future energy capacity with cleaner fuel sources. Energy infrastructure is long lived, and as gas demand declines, any new gas reserves, pipelines and distribution networks are unlikely to be needed over their anticipated operating lifetimes. Continuing to build these immediately stranded assets risks the creation of a 'death spiral', where every gigajoule of gas produced but not sold makes the cost of gas infrastructure higher, pushing up prices for consumers. As gas prices increase, more and more households and businesses will make the switch to cheaper electric alternatives, leaving high fixed costs for gas producers spread over fewer and fewer customers (Acil Allen, 2020). This is not in the interests of government, consumers, or industry, and can be avoided by instead delivering a managed phase out of existing gas operations, and an accelerated rollout of clean, renewable energy projects such as wind and solar.

Electrification and energy efficiency - cutting bills and emissions for Australian families and businesses

More than five million homes around the country currently use expensive, inefficient and polluting gas, whether for heating, cooking or hot water (Energy Networks Australia, 2021). As a result, household energy (including electricity sourced from fossil fuel-reliant grids) makes a significant contribution to total greenhouse gas emissions – around 12 percent of Australia's total yearly emissions (DCCEEW 2023).

Electrifying our homes and businesses, transport and as much of industry as possible, while also improving energy performance across the board, will smooth Australia's pathway to net zero with a grid powered by wind and solar energy.

The Climate Council has published a range of reports and resources on the potential for electrification and energy efficiency to save households money at the same time as cutting energy demand and carbon pollution. In *Smarter energy use: how to cut bills and climate harm* (Climate Council, 2023a), we demonstrated that Australian households can save an average of $2,000 a year on their energy bills by switching from gas to electric appliances, and making energy efficiency upgrades like installing insulation.

This is because electrical appliances typically use less energy than gas alternatives to do the same job. This is particularly true for room heaters and water heating. Heat pumps - which are used in water heaters, reverse-cycle air conditioners and refrigerators - use energy from their surroundings to get the job done. This means that less energy is consumed than is produced.

Further, heating a home in winter and cooling it in summer can account for up to half of a home's energy use, depending on where Australians live (DCCEEW 2023). So the better a home's thermal efficiency, the more its residents can reduce energy bills and emissions at the same time. The International Energy Agency has described energy efficiency as "the first fuel", for the important role it will play in ensuring energy remains reliable, stable and affordable as we rapidly increase the uptake of renewables (IEA 2019).

By prioritising policies that drive electrification and efficiency, the Future Gas Strategy can incentivise and enable households to make the switch off of gas and towards cleaner, cheaper electricity

Climate Council's *Smarter Energy Use* report provides a range of policy suggestions to help Australian households and businesses electrify and improve energy efficiency. Key opportunities include:

- Requiring all new homes and commercial buildings to be all-electric;
- Requiring gas appliances to be replaced with efficient electric alternatives when they reach end of life;
- Providing tailored supports for different types of households to electrify - ranging from government-funded upgrades for public and social housing, through to zero interest loans for households to cover the upfront cost of upgrades;
- Setting minimum energy standards for rental properties and requiring disclosure of energy performance at the point of sale or leasing;
- Setting clear targets - nationally and within relevant sub-sectors - for energy efficiency to drive a focus on demand reduction.

Implementation of these and other policies could dramatically improve the energy performance of all Australian homes, help families cut energy bills and slash their personal emissions. As we rapidly transform all of Australia's electricity grids to be powered by more renewables, the benefits of getting off gas in avoided emissions will continue to increase. The Future Gas Strategy should explicitly acknowledge that we can rapidly reduce gas demand in Australia by pursuing electrification and energy efficiency,

and step out the policy levers the Australian Government will use to achieve this objective.

Making things here in a net zero world: decarbonising heavy industry

Australia's heavy industrial sectors – comprising mining, manufacturing and construction – are directly responsible for around 36 percent of Australia's emissions; or up to half if their electricity use is counted (DCCEEW, 2021). Decarbonising production by moving these industries off gas will be key to securing their ongoing viability in a net zero world, and achieving Australia's own emissions reduction targets.

We will continue to need steel, aluminium, cement, fertilisers, lithium, nickel, copper, chemicals and other industrial products in the decades ahead. Fortunately, there are strong opportunities to cut emissions today across many of these sectors, as well as emerging technology solutions that are expected to be scalable and commercial within the next five to 10 years (Climate Council 2023b).

Some of the biggest opportunities for cutting emissions in Australia's industrial sectors involve the replacement of emissions-intensive manufacturing processes with low and zero emissions alternatives. For example, conventional iron-ore and steel-making methods use fossil fuels like gas to generate vast amounts of heat, with carbon dioxide as a by-product. New technology and processes, like the production of green steel using renewable hydrogen and electric arc-furnaces, will allow steel production to be fully decarbonised.

This is both an economic opportunity for Australia and a significant contribution we can make to driving down global emissions. If Australia made green steel onshore by refining our own iron ore, rather than exporting more than 90 percent of the raw material overseas, we could avoid 1.5 billion tonnes of greenhouse gas emissions annually (three times the amount Australia emits each year), and generate 10 times the profits our iron ore industry does today (Climate Council, 2023b).

Driving this transformation of Australian industry should be a focus of the Future Gas Strategy, to provide policy clarity for Australia's manufacturing and other future-focused industries, and help ensure they continue to thrive in the decades to come. This, combined with complementary policies that drive large scale, low-cost renewable energy and innovation in emerging lower-carbon technologies, will deliver jobs and ongoing prosperity for Australians - now and in the future (Climate Council 2023b).

Recommendation 1

Climate Council recommends the Australian Government prioritise gas demand reduction in the Future Gas Strategy and all associated policies and initiatives, including through widespread electrification strategies, improving energy efficiency in homes and businesses, and scaling up clean energy alternatives for Australia's industrial sectors. In hard-to-abate sectors - such as cement, steel and alumina - government investment in research and development on technology alternatives that can reduce the use of gas is urgently needed.

The Future Gas Strategy should include policies that maintain energy reliability and improve affordability as the grid transitions away from gas, and promote grid stability through batteries and other renewable energy sources.

Issue 2: Growing alternative energy supply

The Consultation Paper notes that at current rates of production, Australia's current reserves of gas would be depleted within 18 years. But scientific consensus clearly shows that Australia must reach net zero by 2035, in order to play our part in holding warming as close as possible to 1.5°C degrees. This is only 12 years away. Given demand for gas will be declining significantly over this same period, we have more than enough gas to meet Australia's energy needs without the need for new supply.

As we electrify everything, demand on the electricity grid will increase overall. This will require substantial investment in new generation capacity and energy supply. But it does not mean that Australia needs, or should allow, the ongoing development of new and expanded gas projects. Rather, the AustralianGovernment should accelerate the rapid rollout of renewables and clean energy infrastructure needed for our energy system to be fully decarbonised. It is crucial that Australia meets our future energy needs – reliably and affordably – with a massive expansion of wind, solar and renewable storage in our energy grid, and the development of clean energy alternatives where these are needed for specific uses, such as renewable hydrogen.

Delivering on our commitments, holding warming as close as possible to 1.5°C

There can be no new fossil fuel projects if the world is to limit global warming to 1.5°C (IEA 2021a).

The IEA's Net Zero Emissions by 2050 scenario (NZE) sets out a pathway to 'stabilise global average temperatures at 1.5°C above pre-industrial levels' (IEA 2023). This is the same goal Australia has committed to under the Paris Agreement, in an effort to protect lives and livelihoods from escalating climate change.

All effort should be directed towards making the NZE scenario a reality, under which there is **no need for new, long-lead time upstream oil or gas projects.** The NZE scenario prioritises large-scale growth in renewables, accelerating electrification, and improvements to energy efficiency as the core components of its critical pathway. It also names the slashing of methane emissions from the energy sector (by 75% by 2030) as 'one of the least-cost opportunities to limit global warming in the near term' and an essential step to avoiding more harmful climate impacts. Together, the IEA finds that these solutions could meet up to 80% of the emissions reductions needed by 2030 (IEA 2023).

In the NZE scenario, gas demand is just a quarter of 2020 levels by 2050. The IEA's 2023 Energy Outlook also highlights an expected glut of additional gas supply coming online globally from 2025 (IEA 2023a). Taken together with Climate Council's analysis which indicates accelerated deployment of renewable energy, electrification and energy efficiency could see demand for gas fall much more rapidly in Australia, the IEA's work confirms we do not need additional gas.

It is crucial for the Australian Government to map out a pathway for the future of gas in Australia that is aligned with our commitments to hold warming as close as possible to 1.5°C. This means a pathway that does not include the development of any new or expanded gas fields or developments in Australia.

Recommendation 2

All new fossil fuel projects increase the risk of more catastrophic climate impacts. As part of the essential effort to hold global warming as close as possible to 1.5°C, Climate Council recommends the Future Gas Strategy set out a clear plan for meeting Australia's energy needs into the future that **does not include** the development of any new gas reserves or operations in Australia.

We need to increase supply of renewable energy, not gas

As well as planning for Australia's energy future without new and expanded gas supply, the Future Gas Strategy should be a roadmap for transitioning away from Australia's existing gas use. The best and only way to achieve this is to increase Australia's supply of renewable energy and storage.

The IEA's NZE scenario requires advanced economies to triple installed renewable energy capacity globally to 11,000 GW by 2030. As one of the sunniest and windiest countries in the world, Australia is very well positioned to contribute to this massive clean energy build out. This would see Australia grow new industries in small and utility-scale solar, together with onshore and offshore wind, as well as enabling the growth of other industries in green manufacturing through abundant and affordable energy.

Forthcoming Climate Council modelling indicates that by growing installed renewable energy generation capacity to approximately 250 gigawatts, Australia could fully phase out the use of gas for electricity generation by 2035 (Climate Council, forthcoming).

Developing alternative energy will encourage regional decarbonisation

Global markets for industrial commodities are rapidly changing as many countries – including some of Australia's key trade competitors and customers – adopt policies to reduce emissions. The first-mover-advantage is large for those countries that are prepared to invest early in developing lower emissions supply chains and new sources of competitiveness in a globally decarbonising economy (Climateworks 2023). International trading partners are looking for low-emissions suppliers; competitors are pricing carbon for their own industries; and destination markets are imposing carbon tariffs at the border. By prioritising clean energy supply over more gas now, Australia is well positioned to secure all-important contracts, relationships and ongoing market share in a decarbonising world.

Additionally, Australia's energy transformation will be crucial to the success of decarbonisation plans from other regional allies. Decarbonising our own economy will show other countries who may currently use Australian energy sources how it can be done. Growing our capacity to export green manufactured goods will also enable our international partners to cut their own manufacturing and other emissions at home. This could be a major additional contribution Australia makes to tackling global warming, because the Scope 3 emissions of our fossil fuel exports - produced when the coal, oil and

gas we sell is burned overseas - are our biggest contribution to the climate crisis. In short, we can help the world decarbonise *and get paid to do so* if we seize the opportunity of moving beyond gas domestically and in our exports.

Recommendation 3

To help Australia efficiently plan and manage our energy transition away from gas, Climate Council recommends the Future Gas Strategy include a pathway for phasing it out, including timeframes for its replacement with alternative clean energy supply across homes, businesses and in electricity generation. This will underpin a managed transition away from gas towards cleaner and cheaper energy sources, while also helping to influence and inform the decarbonisation plans of our international trading partners.

Issue 3: The need for real solutions

The gas industry's vision for the future of the sector relies far too heavily on unproven technologies like carbon capture and storage (CCS), the extensive use of carbon offsets, and unproven gas alternatives which deliver limited real emissions reduction. These are false solutions. To tackle harmful climate change, our core priority must be to deeply and genuinely cut emissions this decade. This means phasing out the burning of fossil fuels as fast as possible.

The Australian Government, via the Future Gas Strategy, should rule out providing policy support and funding or other types of subsidies to these false solutions. Such actions would only serve to artificially prolong gas in our energy system, when cleaner, cheaper and zero-emissions technology is already available. In the following section, the Climate Council has addressed the three most significant false solutions proposed by the gas industry in an attempt to justify an ongoing role for this fuel in our decarbonising energy system.

Carbon capture and storage

Carbon capture and storage (CCS) and carbon capture, utilisation and storage projects (CCUS) are not genuine solutions to the harmful climate impacts of gas on Australian

communities, because they do not stop large amounts of carbon pollution from being released into the atmosphere. CCS attempts to capture carbon pollution as it is being produced through the gas extraction and production process. Even if the technology worked perfectly for this purpose - which it currently does not - this would still do nothing to address the much larger volume of emissions produced when fossil fuels are burned for energy. Across all sectors, the priority for research and investment should be on technologies which can *genuinely and permanently* cut harmful carbon pollution - not just attempt to capture and store a small proportion of it.

Where CCS has been used in an effort to sequester CO_2 from fossil fuels, it has consistently failed to deliver promised results. Australia's largest carbon capture and storage project is Chevron's massive Gorgon gas project off the coast of Western Australia. Chevron was given permission to develop the gas field *on the condition* that it captured the carbon dioxide it produced, and buried at least 80 percent of it. In 2016, Chevron did not have the technology ready to meet this condition but started extracting gas anyway. In fact, Chevron did not start to capture and store any CO_2 from its operation until August 2019, after three straight years spewing unchecked emissions into our atmosphere.

Every year since then, the Gorgon facility has failed to capture the promised amount of CO_2, and is now Australia's single largest industrial emitter. Earlier in 2023, it was revealed that emissions from the project jumped up by more than 50%, to 8.3 million tonnes, while the amount of CO_2 being captured dropped by 30%, to just 1.6 million tonnes (Guardian, 2023). This project is <u>not</u> the success story that the Future Gas Strategy discussion paper suggests.

Chevron is not alone in struggling to make CCS work; the Institute for Energy Economics and Financial Analysis (IEEFA) has observed: 'underperforming carbon capture projects considerably outnumber successful projects globally, and by large margins' (IEEFA, 2022).

Even if CCS and CCUS technologies can be proven to work at a scale that is sufficient to capture onsite emissions from fossil fuel production in the future, they still won't be an answer for the vast majority of fossil fuel emissions. The majority of carbon pollution comes from the burning of coal, oil and gas for energy – dwarfing emissions from the extraction and processing of fossil fuels many times over. For example, emissions from using Australia's gas exports are around eight times greater than the emissions produced by gas extraction and processing here in Australia (TAI, 2021). These emissions can never be captured by any kind of onsite carbon capture technology in Australia because they are produced later, after fossil fuels have been sold, shipped off and burned.

Further, there are a number of unknowns and potential health, environmental and safety risks for communities living near projects that attempt to store and sequester carbon below ground. This includes the possibilities of abrupt or catastrophic leakage of CO_2 from storage sites, gradual leakage which can pollute ground and drinking water and ruptures which could stimulate seismic activity (CIEL, 2021).

The bottom line is CCS, CCUS and technologies like this – often developed by the fossil fuel industry themselves – are expensive, do not exist at sufficient scale, do not capture the majority of fossil fuel emissions, and do not deal with the much larger problem of emissions due to the burning of coal, oil and gas for energy. Approving new or expanded oil or gas projects on the basis they will try to use CCS is simply a recipe for more harmful carbon pollution. It must not be used to justify more extraction and use of gas, and the Australian Government should rule out further policy or funding support for this technology.

Carbon offsets

Similarly, carbon offsets should not be used as an alternative to genuine emissions reduction, or as part of a genuine plan to meet our national climate targets. 'Offsetting' involves buying a "credit" from an activity that reduces pollution in order to justify a polluting activity, where typically one credit permits the emission of one tonne of *carbon dioxide equivalent.* Offsets are created through projects which reduce, avoid or capture emissions - like planting trees, restoring damaged environments and capturing landfill gas. While this sounds like a fair balance, offsets can never effectively account for the harmful greenhouse gases created by burning fossil fuels.

That's because carbon dioxide released by burning fossil fuels is fundamentally different from the carbon stored above ground in trees, wetlands and in the soil. When we burn fossil fuels, we release carbon that has been locked away in the Earth's crust for millions of years, pumping vast ***new*** volumes of carbon into the active carbon cycle. This is altering the balance of carbon in the Earth system, and doing so faster than ever recorded in geological history. To make the problem worse, much of the carbon stored in land-based offsets does not stay stored. Forests can easily be destroyed by fire, disease, floods and droughts, all of which are increasing with climate change. So the carbon that has been stored literally goes up in smoke (Morgan, 2023).

Offsets are currently a popular way for gas companies to claim they are taking action to tackle climate change. This is because they can keep polluting as usual and pay for offsets to account for the emissions they produce on paper. While there is a limited role for offsets to play in hard to abate industries, these should only apply while permanent solutions to

genuinely cut emissions are being progressively phased in. Offsetting can never be a solution to new and expanded gas projects in Australia, because they do not prevent more harmful carbon pollution being released into our atmosphere.

Unproven gas alternatives

The gas industry has a strong commercial interest in prolonging the use of this polluting fossil fuel as far into the future as possible. Both gas producers and network companies are currently promoting various forms of fossil gas products or blends as 'renewable' or 'zero emission' gases.

To address this, the Future Gas Strategy should establish clear and unambiguous definitions of 'renewable gases' based on scientific evidence, and limit any policy and incentive mechanisms to fuels which meet this definition.

Renewable hydrogen is produced using electrolysis, where renewable electricity is used to split water into hydrogen and oxygen. Only hydrogen that is produced with a zero emissions electricity source - like wind and solar - can accurately claim to produce zero emissions.

Traditional methods of hydrogen production - such as steam methane reforming (SMR) or coal gasification - are reliant on fossil fuels, which contribute to greenhouse gas emissions. Even if technologies like carbon capture and storage (CCS) are implemented, these methods can at best be termed 'lower-carbon,' not zero-emissions. They still result in some level of carbon dioxide and other greenhouse gases being released into the atmosphere, fuelling harmful global warming. These types of hydrogen are often promoted by gas corporations as 'clean' or renewable gases but they should not be considered as such because of their ongoing contribution to harmful climate change (Climate Council 2023c).

Biogas or biomethane is a form of methane produced by the fermentation of organic matter. It is a lower emissions fuel than fossil gas and has a range of benefits, including:

- Capturing stray methane: The biomass that acts as a fuel stock for biogas is organic waste and comes from a variety of sources, like agricultural waste, food waste, and wasted crops, all of which typically produce methane emissions. Methane is a powerful greenhouse gas, capable of heating the planet by 85 times more than carbon dioxide in the short term. Capturing and then using this

methane can prevent these emissions from escaping to the atmosphere and exploit their potential to provide energy.

- Reducing emissions in hard-to-abate sectors: While wind and solar, electrification, renewable hydrogen and energy efficiency will play a bigger role than biomethane, there are some tasks that will be simpler to accomplish with biomethane. This includes using it as a chemical feedstock in some manufacturing processes, and in the refining of some metals.
- Reducing waste: In many cases, the biomass used to produce biomethane would typically wind up in landfill, meaning its nutrients are not necessarily circulated through the ecosystem. By utilising the biomass to create biomethane, it's spared from waste. Further, the solid byproduct of producing biomethane – the digestate – can be used as fertiliser (Climate Council 2023d).

However, it is also important to note that the extent to which biomethane represents a significantly lower emissions and more sustainable alternative to other fuels depends upon the supply chain by which it was produced. For example, the collection and transporting of organic material for processing into biomethane can involve significant transport emissions (Nevzorova and Kutcherov, 2019). Studies have highlighted significant issues with methane leaks along the biomethane supply chain (ICL, 2022). Further, the production of biomethane from purpose-created organic sources would be far less sustainable than its production from waste by-products. For this reason, the supply of genuinely sustainable biomethane is expected to be relatively constrained.

There are a wide range of other gas products promoted by the fossil fuel industry as 'renewable'. Prominent among these are fossil gas-hydrogen blends, where a very small amount of hydrogen is mixed with standard fossil gas. Current research indicates that blending of only around 5 percent is possible for gas-fired power plants (Cakir et al, 2023), and no more than 10-20 percent in gas pipelines because of the lack of compatibility with existing gas transportation infrastructure and appliances (IEA, 2022). These fossil gas blends achieve minimal emissions reduction because the majority of the product is still polluting methane. They are not renewable gases, and companies presenting them as such are engaging in greenwashing. The UK's National Infrastructure Commission (NIC) recently advised the British Government that hydrogen was not suitable for heating homes and businesses, and it should be ruled out as an option to enable an exclusive focus on switching to electrified heat. The complexity of converting the gas network and homes to hydrogen is another point against the use of blue hydrogen (NIC 2023).

Renewable hydrogen and biomethane provide positive opportunities to significantly reduce emissions in instances where electrification and energy efficiency alone cannot address energy needs. In designing policy and initiatives to incentivise their production, it is essential these do not also encompass false solutions like blue or grey hydrogen, or blended fossil gas with a small proportion of renewable hydrogen content. Climate Council recommends these fuels be ruled out of scope for any future policy support from the Australian Government, and calls for this be formalised through explicit criteria for renewable gases if these are to be addressed by the Future Gas Strategy.

Recommendation 4

The Future Gas Strategy should not fund or provide policy support to false solutions such as CCS, blue hydrogen, offsets or other initiatives which unnecessarily prolong the use of gas in our energy system. Instead, the Future Gas Strategy should promote genuine emissions reductions efforts as we phase down gas production.

The Future Gas Strategy should also establish clear and unambiguous definitions of renewable gases, which limit the use of this term to renewable hydrogen produced with wind or solar energy and a sustainable water source, and biomethane produced through a genuinely low emissions supply chain.

Conclusion

We are now living in the era of climate consequences, when the impacts of a warming climate are hitting home for communities and our environment, right around the world. There is still a chance to hold global warming as close as possible to 1.5°C and protect Australians from worse to come. But any new fossil fuel infrastructure puts this target at risk. That includes any new or expanded gas projects.

The Future Gas Strategy must recognise both the implications and the opportunities this presents for Australia's community and economy. We do not need new gas supply when gas demand is set to decline, and renewables are cheaper, cleaner and more readily available.

Instead, the Australian Government has a unique opportunity to lay the foundations for Australia's rapid transition to clean energy. We must race to rapidly cut emissions this decade, ramp up electrification and energy efficiency, and replace gas and fossil fuels as quickly as possible with clean, reliable and affordable energy. Doing so would have many benefits for Australians; lower energy bills for families and businesses, cleaner homes, better protection of our environment; and a safer future with less extreme weather and climate disruption.

This is a choice the Australian Government must make today. Made correctly, it could lead to a future in which climate, economic, and environmental outcomes for Australians, as well as for efforts to fight climate change globally, are significantly improved.

But it is a choice that will require bold leadership and a commitment to the safety and security of future generations. We urge you to choose wisely.

Confidential Appendix

Extract of forthcoming Climate Council modelling, undertaken in partnership with the Institute for Sustainable Futures, University of Technology Sydney.

Primary Energy Demand [PJ/a]	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Total (incl. non-energy-use)	5,069	4,425	3,533	4,546	5,345	6,049	7,127
- Fossil (excluding on-energy use)	4,419	3,390	1,241	644	340	120	0
- Hard coal	776	1,018	69	56	0	0	0
- Lignite	929	230	1	0	0	0	0
- Gas	1,012	891	433	231	173	93	0
- Crude oil	1,703	1,252	738	357	167	28	0
- Nuclear	0	0	0	0	0	0	0
- Renewables	453	849	2,107	3,666	4,732	5,624	6,774
- Hydro	56	61	82	151	200	239	288
- Wind	63	153	394	884	1,369	1,674	2,062
- Solar	88	303	926	1,869	2,383	2,897	3,474
- Biomass	245	306	645	632	566	522	520
- Geothermal	1	26	53	105	172	232	335
- Ocean energy	0	0	7	25	42	60	96
Total RES	**453**	**849**	**2,107**	**3,666**	**4,732**	**5,624**	**6,774**
RES share	**9%**	**20%**	**63%**	**85%**	**93%**	**98%**	**100%**

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