



Australian Government
Department of Industry,
Science and Resources

Future Gas Strategy consultation paper

Consultation paper

Introduction

Australia's gas¹ policy settings impact energy security, affordability, the environment and local economies. This is true in Australia and our export markets.

Australian gas is part of many modern supply chains as an energy source and as a feedstock for manufacturing. These supply chains connect us with our trade and investment partners, creating essential goods, services and jobs.

The role of gas will continue to change as the world decarbonises to address dangerous climate change and meet commitments under the Paris Agreement. How, and how fast, is uncertain. But 151 countries, accounting for around 90% of global emissions, have committed to reach net zero.

Many of these countries are reducing their reliance on gas as they scale up renewables. Others are turning to gas to reduce their reliance on other fossil fuels.

In this context, Australia needs an evidence-based, long-term strategy to help the Australian Government, other governments, industries, communities and households make decisions. This strategy must support decarbonisation and maintain our international reputation as a trusted trade and investment partner. It must also support and complement Australia's vision to be a renewable energy superpower. This will make the most of our comparative advantages in a global net zero economy.

In a complex geopolitical environment energy security is intertwined with national security. Australia must manage its evolving roles as a trusted gas exporter and a responsible climate actor with transparency, integrity and a strong evidence base.

The Future Gas Strategy will provide a medium-term (to 2035) and long-term (to 2050) plan for gas production, consumption and substitution in Australia. Given the uncertainty associated with the future of gas, the strategy will seek to be flexible to promote resilience to future events and circumstances.

The strategy's key objectives are to:

- support decarbonisation of the Australian economy
- promote Australia's energy security and affordability
- enhance Australia's reputation as an attractive trade and investment destination
- help our trade partners on their own paths to net zero.

The strategy will investigate the supply-demand balance of gas to 2050 to meet net zero emissions. It will look at where, when and how much Australian gas is needed. We'll consider the needs of:

- all gas market participants, including producers, transporters, industry users, consumers, investors and our trade partners
- those who live near, work and are affected by natural gas developments, including local communities and First Nations peoples.

Reducing domestic gas demand faster than supply will meet the strategy's first and second objectives. Supply disruptions and high prices are among the consequences of reducing supply faster than demand. These consequences impact the whole economy, including indirectly through the

¹ In this paper, 'gas' means natural gas, a fossil fuel consisting largely of methane and other hydrocarbons, occurring naturally underground.

electricity system. They also impact those who can least afford them the most, worsening poverty and inequality.

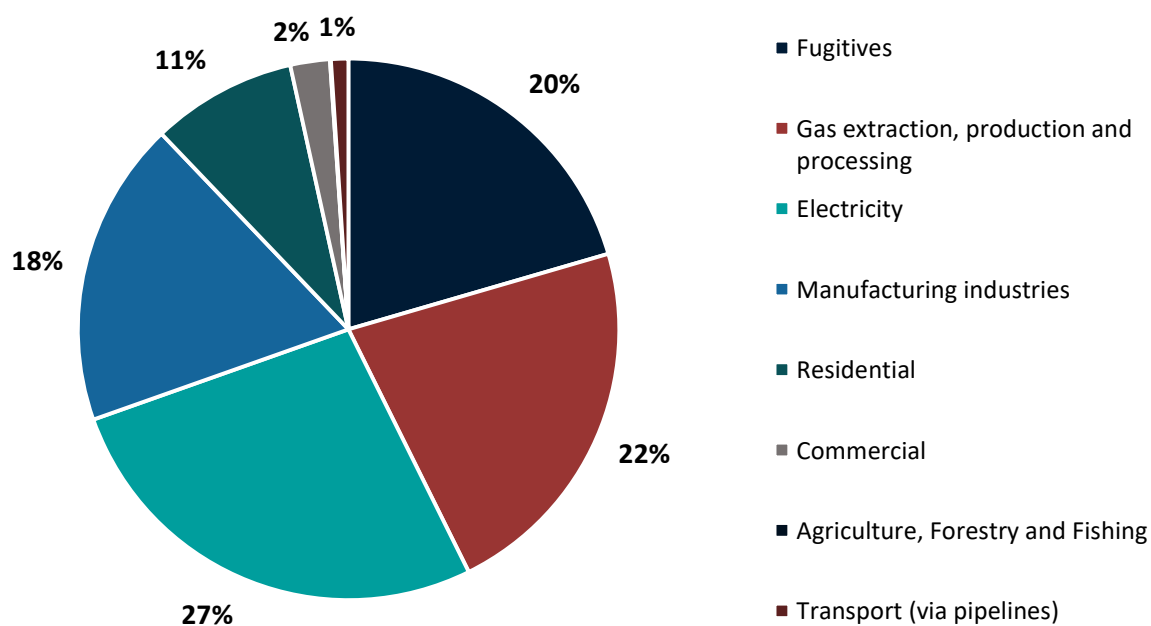
To avoid these consequences, we need to ensure sufficient - but not excess - supply of gas to meet demand at all stages of the energy transition. Producing this supply means continued private sector investment in gas developments, even under scenarios with large and rapid reductions in gas use from consumers embracing electrification or industrial shifts to hydrogen.

The Future Gas Strategy will examine how continued investment can be consistent with Australia’s legislated objective to reach net-zero emissions by 2050. Around 21% of Australia’s national net greenhouse gas emissions are related to gas production and use.

Producers and consumers must reduce, capture or offset these emissions to meet our national climate targets. Consumers can reduce emissions from gas use by increasing energy efficiency and using substitutes for gas.

Producers can reduce production-related emissions by working to ensure more gas gets to customers. Minimising venting, flaring, fugitives and fuel gas use are some of the ways to do this. Figure 1 illustrates the total carbon dioxide equivalent (CO₂-e) emissions profile of gas extraction, production and processing, and other sectors of the Australian economy.

Figure 1: Total emissions from gas extraction and use (CO₂-e), breakdown by sector for 2020-21²³



Chapter 1 of this consultation paper looks at uses for gas in Australia’s economy and explores potential substitutes.

² DCCEEW, [Emissions inventory: Paris Agreement, 2020-21 data, which is the most recent published data available at the time of writing](#). ‘Gas extraction, production and processing’ is the Intergovernmental Panel on Climate Change’s ‘manufacture of fuels category’. In Australia, this category largely consists of emissions from gas extraction, production and processing with small amounts of emissions from the manufacture of other fuels (for example coal). The category ‘Manufacturing industries’ includes the manufacture of ammonia.

³ Percentage values have been rounded to the nearest whole number.

Chapter 2 looks in more detail at ways to reduce production emissions and ensure adequate Australian gas production to meet demand.

We welcome feedback from anyone with an interest in the issues raised in this paper. We are accepting responses to this paper from 3 October 2023 to 13 November 2023.

In addition to this public consultation, we are conducting targeted stakeholder consultation. If you'd like to participate in targeted stakeholder consultation, please let us know by emailing GasOptions@industry.gov.au.

Your response will inform the development of the Future Gas Strategy. We will conduct further consultation on specific policies and programs the strategy recommends. We expect to release the strategy in mid-2024.

Submit your feedback on our consultation hub:

<https://consult.industry.gov.au/future-gas-strategy>

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Discussion questions

This paper seeks wide-ranging views on the future of gas in Australia. We invite everyone from households through to gas producers and investors to give their feedback, which will inform Australia's Future Gas Strategy.

You do not need to answer all questions to submit a response.

Audiences

We have segmented and colour-coded the questions under stakeholder groups that have a specific relationship with the Australian gas sector. However, all stakeholder groups are welcome to respond to any of the questions in this consultation paper they find relevant.

Producers (producers colour code)

Businesses operating in Australia that extract gas from onshore or offshore fields and their workers. This includes the industries that support the gas sector, exploration companies, unions and investors that fund Australian gas projects.

Domestic consumers (domestic consumers colour code)

Businesses and households that use gas in Australia, either as a heat source or feedstock to manufacture goods. This includes fertiliser manufacturers, glassmakers, plastic companies, heavy industry, gas generators and retailers, household advocacy groups and unions.

International consumers (international consumers)

Businesses that use gas/LNG overseas and the governments of Australia's trade and investment partners. This includes foreign energy utilities and foreign governments.

Distributors and LNG import terminal project proponents (distributors and LNG import terminal project proponents colour code)

Companies that operate or have an ownership stake in gas transmission and distribution pipelines. Or that plan to establish LNG import terminals.

Community and general public (community colour code)

Those who live near, work and are affected by natural gas developments, the general public and interest groups. This includes communities in gas producing areas, First Nations peoples, landholders hosting gas developments, unions and environmental advocacy groups.

Chapter 1: Demand

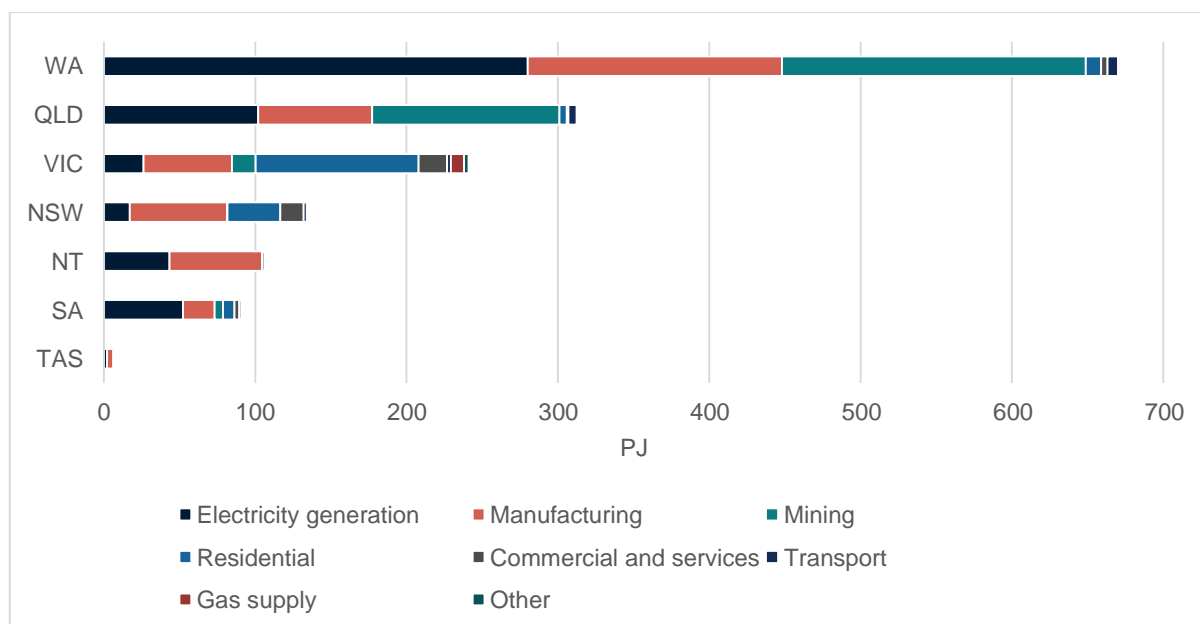
Australian gas is used in Australia and by our trade partners:

- to generate electricity
- as a heat source for the residential and commercial sectors (homes and small businesses like restaurants)
- as a heat source for large scale industrial users (factories and smelters)
- as a feedstock in manufacturing (for example, to produce fertiliser, plastics, clothing, insulators and detergents)
- as a transport fuel.

Gas use in Australia

Gas used in Australia is known as ‘domestic gas’ and is used in many different ways across Australia (see Figure 2, below, and Chapter 2). In Victoria and New South Wales, households and manufacturers consume the most gas, whereas in Western Australia and Queensland, electricity generators, manufacturers and mining consume the most gas.

Figure 2: Domestic gas use by jurisdiction 2020-2021⁴



Gas in electricity generation

Gas is an important fuel to generate electricity in Australia.

Australia’s gas-fired generators consumed around 380 petajoules (PJ) in 2020-21, which produced around 5.7% of Australia’s greenhouse gas emissions.⁵ The extent to which gas-fired generators are

⁴ DCCEEW [Australian Energy Statistics 2022 Energy Update Report](#), Commonwealth of Australia, 2022, accessed 14 July 2023. This is the most recent publication of nationally consistent energy statistics at the time of writing. *Excludes LNG. Other includes Agriculture, Construction, Water and Waste.

⁵ Gas consumption figure is from DCCEEW, [Australian Energy Update 2022](#), accessed 20 July 2023. Australia’s net emissions in 2020-21, as reported in the National Inventory Report, expresses this as a percentage of

used in any given year depends on several factors, including the coldness of the winter and the cost-competitiveness of alternatives.

Gas is expected to play a key role as the electricity sector moves to renewable energy sources.⁶ Gas, alongside electricity storage, will support electricity grid firming. Grid firming means the ability to keep the electricity grid stable when energy from other sources, such as renewables, becomes intermittent. The Australian Energy Market Operator (AEMO) 2022 Integrated System Plan finds gas is necessary to support the Australian Government's target to reach 82% of electricity generated from renewables by 2030.

In electricity grids, rapid changes in power output from variable renewable energy generation (solar and wind) and unplanned outages of ageing and increasingly unreliable coal generators need to be balanced with generation technology that can quickly increase (ramp up) or decrease (ramp down) power output. This firming service becomes more important as the share of renewable generation in the system increases. Unlike some other forms of generation, gas-fired generators can 'fast ramp', rapidly adjusting their power output to meet fluctuating electricity demand and supply. In addition, gas-fired generators can provide system services that make the electricity system more stable. Other stored energy, such as batteries, pumped hydroelectricity and possibly hydrogen can also provide these electricity system services.

In Australia's National Electricity Market⁷ (which does not include Western Australia or the Northern Territory) the system services gas generation provide are crucial. But its overall contribution to the energy mix is anticipated to decrease over the coming decades, in absolute terms and as a percentage of total energy production.⁸ In contrast, peak gas generation is projected to rise, particularly during winter. This is because less direct sunlight and wind causes lower renewable energy generation (see Figure 3).

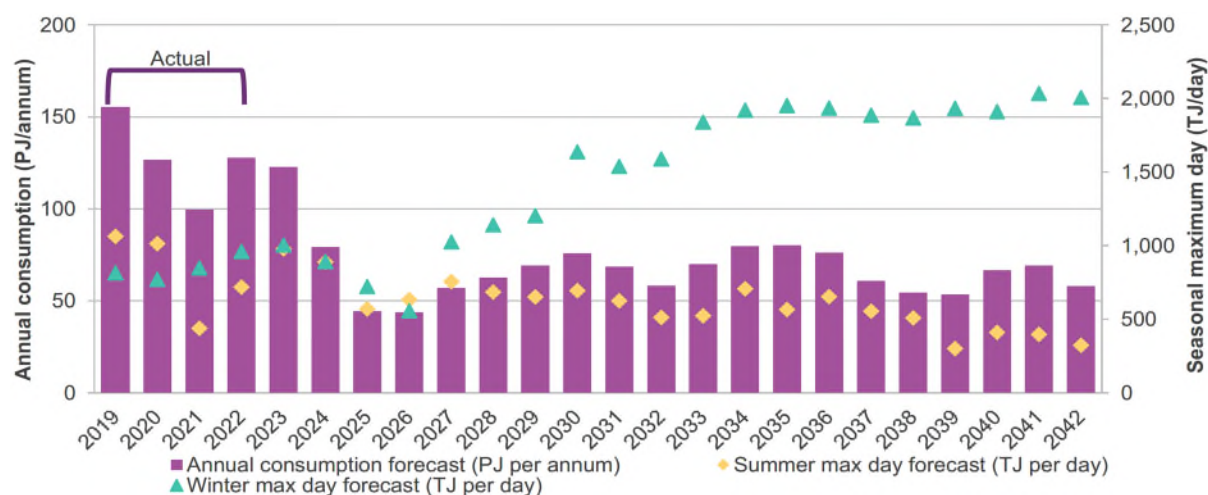
national emissions. These figures do not include natural gas and greenhouse gas emissions associated with producing or transporting the gas that gas-fired generators use. These are the most recent publication of nationally consistent energy statistics and emissions reporting at the time of writing.

⁶ See Australian Energy Market Operator's (AEMO) Orchestrated Step Change scenario in AEMO, [2023 Gas Statement of Opportunities: for central and eastern Australia](#), AEMO, 2023, accessed 14 July 2023.

⁷ Australia's National Electricity Market operates in New South Wales, the Australian Capital Territory, Queensland, South Australia, Victoria and Tasmania.

⁸ AEMO, [2023 Gas Statement of Opportunities](#).

Figure 3. Actual and forecast NEM gas generation annual consumption (petajoules/year) and seasonal daily demand (terajoule/day), orchestrated step change (1.8 °C) scenario, 2019-42⁹



In Western Australia, gas powered generation is expected to increase in the medium term. This is because of scheduled coal-fired generators closures in the WA Gas Statement of Opportunities (WA GSOO) outlook period to 2032. The WA GSOO 2022¹⁰ highlights the strong linkages between WA’s gas and electricity sectors. It forecasts increased gas generation as WA replaces retiring coal fired generators.

The Northern Territory predominantly sources electricity supply from gas-fired generation (88% in 2020-21).¹¹ Gas-fired generation is expected to remain relatively stable in the Northern Territory, as there is no coal-generated electricity and large-scale renewable projects are still progressing. Although stepped increases have occurred with the commissioning of LNG export facilities.

Improving energy performance

Improving energy performance can help advance many of the Future Gas Strategy’s objectives, including energy security, affordability and reducing emissions.

The Australian Government’s [National Energy Performance Strategy](#) will explore options to help households and businesses use less energy. These include:

- demand-side measures like energy efficiency
- fuel switching approaches and technologies, including increasing electrification.

In the National Electricity Market (NEM), the system operator, the Australian Energy Market Operator (AEMO), balances supply and demand.

Electricity generators in the wholesale market bid for the quantity of electricity they are willing to supply and the price they want. They do this in 5-minute dispatch intervals in each NEM jurisdiction. Electricity from generators is then dispatched by the market operator in price order from lowest to highest up to the level needed to match demand for the interval. The most expensive generator (the ‘marginal generator’) sets a single clearing price that is paid to all generators dispatched.

⁹ AEMO, [2023 Gas Statement of Opportunities](#).

¹⁰ See AEMO, [Western Australia Gas Statement of Opportunities](#), December 2022, accessed 27 July 2023.

¹¹ [Australian Energy Update 2022](#), Table F: Australian energy consumption by state and territory, by industry, energy units, accessed 27 July 2023.

In 2022, gas generators set the wholesale electricity price around 12% of the time in the NEM. Gas generators are crucial to system security when coal plants experience unplanned outages and when demand is high.

The role of gas generators varies between jurisdictions.¹² Gas plays a more prominent role in South Australia where it comprises 33% of the state's total generation mix. This is compared to 8% in Queensland, and only 2% in Victoria and New South Wales.

Gas as a heat source in homes and small businesses

Australian homes and small businesses (the residential and commercial sector) consumed an average of around 200 PJ of gas per annum between 2011-2021. This consumption produced around 2.3% of Australia's national net greenhouse gas emissions.^{13,14} Compared to gas-fired generation, gas consumption in the residential and commercial sector changes less from year to year. However, unusually cold winters can result in increased demand.

Homes and small businesses use gas to:

- cook food
- heat water
- provide warmth in winter.

Significant gas pipeline infrastructure in many jurisdictions puts gas into homes for these purposes.

There are electric alternatives to gas appliances. The Australian Government's \$1.3 billion Household Energy Upgrades Fund will create low-interest loans and fund upgrades to social housing to improve energy performance. This includes replacing older gas appliances with electric ones.

Some Australian homes and businesses would save money on their energy bills by switching to electric appliances.¹⁵ Australians living in jurisdictions with generous subsidies for switching to electric appliances and with on-site solar would save the most. However, Western Australians, given their cheaper gas prices, will find electrification more expensive.

The number of gas connections has increased over recent years (see Figures 4 and 5). This is despite the long-term financial incentives to transition away from gas, and regulations promoting electrification or banning gas connections. In part this reflects gas connection policy settings and the high upfront costs involved in switching from gas appliances to electric appliances.

¹² State of the Energy Market 2022, Australian Energy Regulator, 2022, accessed 14 September 2023.

¹³ The emissions estimate does not include emissions associated with producing or transporting the gas homes and small businesses use.

¹⁴ DCCEEW, [Australian Energy Update 2022](#), DCCEEW Website, Table F, accessed 9 August 2023.

¹⁵ T Wood, A Reeve, and E Suckling, [Getting off gas: why, how, and who should pay?](#), Grattan Institute, 2023, accessed 14 July 2023.

Figure 4: East Coast Gas Connections¹⁶

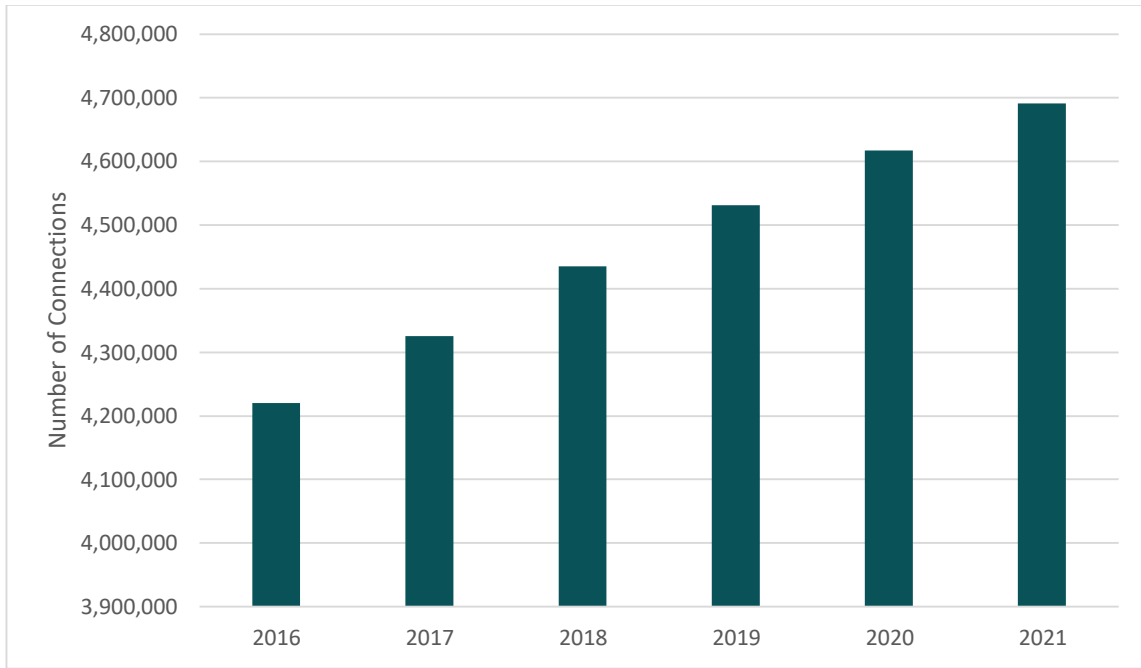
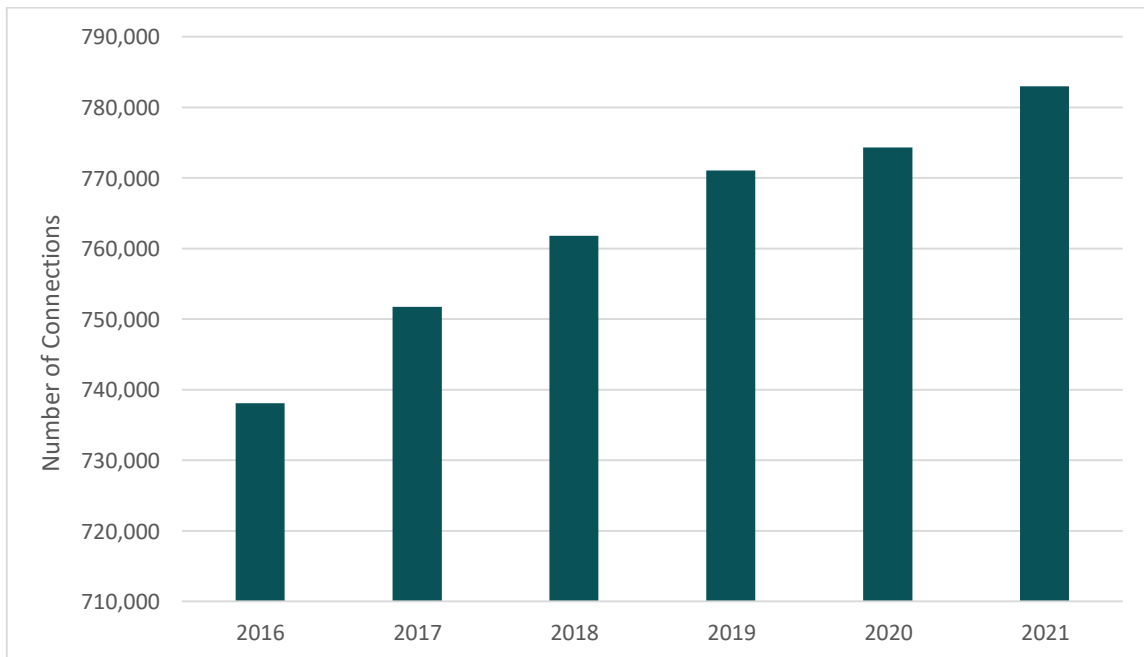


Figure 5: Western Australia Gas Connections¹⁷



¹⁶ AEMO, [Gas Statement of Opportunities 2023](#), AEMO Website, accessed 9 August 2023. This connection data covers all eastern states and territories, with the exception of the Northern Territory, whose connection data was not in the 2023 Gas Statement of Opportunities.

¹⁷ Gas connection chart for WA is based on Annual Performance Report for Energy Distributors from 2016 to 2021, published by Economic Regulation Authority (ERA), [Energy Reports](#), ERA website, 2023, accessed 20 July 2023.

Natural gas use in domestic manufacturing

Natural gas is the largest source of energy for Australia's manufacturing sector.¹⁸ In 2020-21 Australia's manufacturing sector used 408 PJ or approximately 26% of domestic gas supply.¹⁹

Manufacturers use gas:

- to generate electricity onsite (38 PJ or 9% of Australia's manufacturing gas use)
- as a feedstock in chemical process (66 PJ or 16% of Australia's manufacturing gas use)
- as a heat source (304 PJ or 75% of Australia's manufacturing gas use).

The outlook for gas demand by Australia's manufacturing sector depends on the cost, availability, and scalability of alternatives. The proposed alternatives to gas could include:

- renewables and electricity grid access for onsite electricity generation
- hydrogen, carbon dioxide (CO₂) and biogas for feedstock applications
- electrification for some heat applications.

Note that some of these alternatives are under development.

Manufacturing gas demand is expected to remain steady until 2028, before gradually declining over the next few decades.²⁰ On the east coast, AEMO forecasts a steady decline over the 20-year outlook for large industrial and commercial sectors. Demand is likely to drop from 259 PJ in 2022 to 229 PJ by 2042 (down 12%).²¹ This decline is expected to be driven by opportunities for electrification and fuel-switching from gas to hydrogen from the late 2020s. However, timing remains uncertain as technology develops. While gas will likely remain an important input for Australian manufacturing after 2030, uncertainty remains about the amount and profile of gas demand over the coming decades.

Gas as a manufacturing feedstock

Gas is currently used to manufacture a wide variety of products like:

- fertilisers
- plastics
- explosives
- clothes
- medicine
- sporting goods
- consumer products
- chemicals.

Feedstock gas is industrially processed and bonded through chemical reactions into final products. For example, gas is a feedstock for the essential diesel-fuel additive, AdBlue®. AdBlue® converts nitrous oxide, a powerful greenhouse gas, in the exhaust gas of diesel engines into nitrogen and water. This lowers transport sector emissions.

¹⁸ DCCEEW, [Australian Energy Update 2022](#).

¹⁹ DCCEEW, [Australian Energy Update 2022](#).

²⁰ 'Commercial and industrial' sector in AEMO, [2023 Gas Statement of Opportunities](#).

²¹ Ibid.

Future demand for gas as a feedstock will depend on the availability and cost effectiveness of substitutes like hydrogen and biomethane.²² Many potential substitutes are currently not produced at all or at commercial scale or are not cost competitive with gas. For example, globally most hydrogen used in the industrial sector today is produced from unabated natural gas or coal.

Gas substitution may need manufacturers to upgrade their plants and equipment.

Considering gas alternatives will likely increase in the medium to long term, driven by:

- technology maturation
- pace of decarbonisation in the global economy
- government programs like the \$15 billion [National Reconstruction Fund](#) and \$2 billion [Hydrogen Headstart](#) for renewable hydrogen projects.

Gas as a heat source in manufacturing and minerals processing

Gas is used as a heat source in industries like:

- food and beverage
- grain processing
- textiles
- pulp and paper
- minerals processing, including critical minerals
- basic non-ferrous metal products
- glass
- ceramics
- brickmaking
- cement.

Some sectors, for example food and beverage, use lower-heat processes. Electrification may replace gas in some of these processes through commercial technologies like heat pumps or alternative fuels like biomass.

Other sectors, for example minerals processing, alumina refining, brickmaking, cement and glass works, use high-heat applications. A number of companies processing critical minerals across Australia currently rely upon gas to support their operations. For instance, gas is used in the production of lithium hydroxide which requires very high heat kilns to extract lithium from the spodumene host rock. Electrification of kilns is an emerging technology but not yet widely deployed.

These applications will likely continue in the medium to long term because of the lack of currently available commercial alternatives.

Several factors will determine the use of gas and the rate of fuel switching:

- technological progress
- scaling up of gas alternatives
- corporate, domestic and international decarbonisation pathways.

Consultation questions

Gas is used across nearly every sector in Australia's economy. Gas demand and use in each state and territory is unique, driven by history, energy policy and access to affordable supply. Through the

²² IEA 2022, [Global Hydrogen Review](#).

Future Gas Strategy, the Australian Government aims to better understand our future gas needs as we transition to net zero by 2050.

Use these questions to guide your input into the government's consultation process.

Consumers (domestic)

1. Do you use any international and/or domestic forecasts to inform your outlook of the gas market? We want your views on which scenarios best reflect the demand outlook. Are there any limitations or additional factors impacting the demand outlook you would like to note?
2. What role do you see gas-fired generators playing in supporting Australia's 82% renewable energy targets and beyond?
3. How will the expected trends in demand from gas-fired generators impact other gas users?
4. What should government do to consider managing these impacts and to mitigate energy peaks caused by regional or seasonal variations?
5. How feasible, and at what scale, are alternatives to natural gas for the electricity sector? You may wish to consider renewable gas alternatives for peaking generation, for example, biomethane and low-emissions hydrogen and other forms of grid-firming technologies like batteries and pumped hydroelectricity. What barriers exist to using these alternatives?
6. How much longer will you continue using gas as a fuel source or feedstock for your business? Do you think your consumption of gas will decline over time, and if yes, at what rate?
7. Are there alternatives that your business can use instead of gas (for example electrification, hydrogen, biomethane or circular economy inputs)? What barriers exist to using these alternatives? How can the substitution of gas be accelerated?
8. What factor/s influence your willingness to adopt electric appliances or processes? How could governments support small businesses to decrease gas consumption?
9. What role might carbon capture, utilisation and storage (CCUS) and negative emissions technologies (NETs) (for example direct air capture and CO₂ removal) play in decarbonising industrial processes that are hard to abate in your business or industry?

Community

10. If your home or small business gas appliances (stove, heating, or hot water system) stop working, would you prefer to keep using gas or switch to an electric appliance? If you are unsure, what would help you decide? What factors influence your willingness to switch to electric appliances?
11. How can governments, industry and households work together to manage impacts for homes?

Australian LNG in the world's transition to net zero

Global LNG trade increased to 401.5 million tonnes (MT) in 2022, 25.4 MT higher than the previous calendar year. The increase is largely because of the disruption of pipeline gas from Russia to Europe.

Australian gas, exported as LNG, plays a central role in regional energy security. Recent global events have increased the importance of Australia as a trusted energy export partner both in the short- and longer-term. Around 70% of Australia's gas production is exported, mainly on long-term contracts into East Asia (Japan, China, Republic of Korea and Taiwan).

Last year, Australia met:

- 40% of Japan's gas demand
- 36% of Taiwan's gas demand
- 25% of Republic of Korea's gas demand
- 25% of Singapore's gas demand
- 8% of China's gas demand.^{23,24}

Australia's LNG industry development has forged strong international energy partnerships. A high level of trust in Australia as a reliable energy supplier and attractive foreign investment destination underpins these relationships. Investors also rely on Australia as a stable and secure destination for investment in energy production. This reputation has resulted in large LNG trade and investment flows.

The Department of Industry, Science, Resources estimates that the wave of investment in Australian LNG facilities that took place between 2010 and 2020 required upwards of \$244 billion. According to the Australian Bureau of Statistics, the sector has cumulatively spent \$31.6 billion on exploration alone since 2010²⁵. Maintaining investment flows will be critical to maintaining gas and LNG supply.

Australia is among the world's largest LNG exporters, accounting for 21% of global LNG exports in 2022 (see Figure 6). In 2021, around 93% of Australia's earnings from LNG exports came from sales to Japan, China, Republic of Korea, Taiwan and India.²⁶

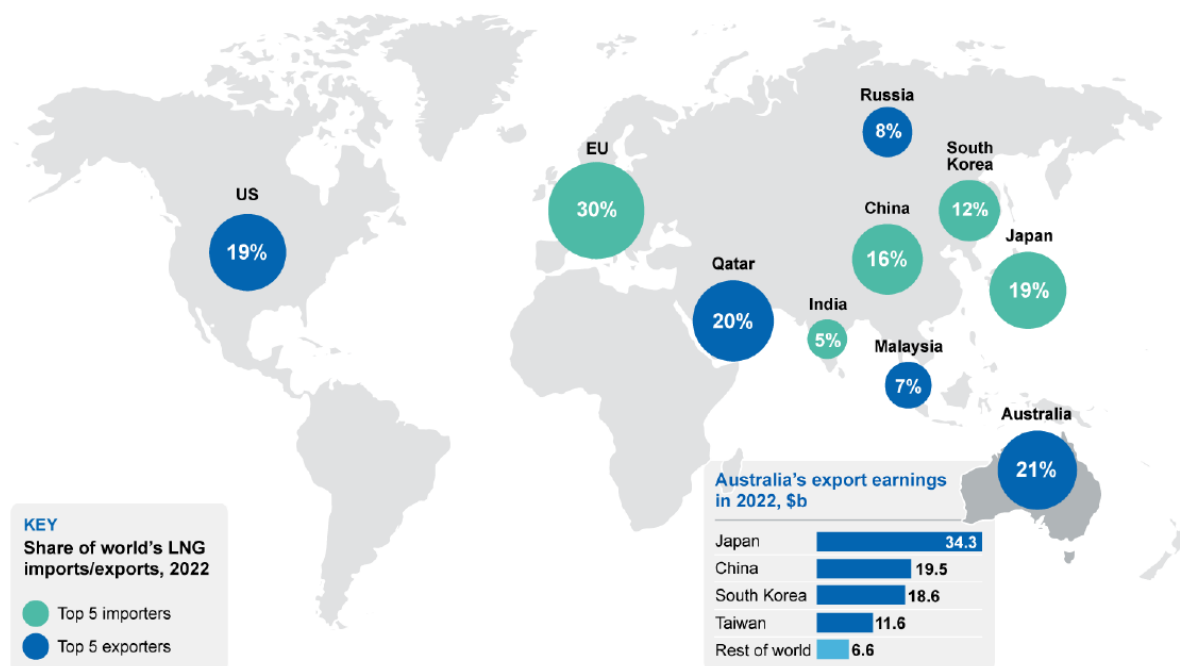
²³ Department of Industry, Science, Resources (DISR), [Resources and Energy Quarterly March 2023](#), Commonwealth of Australia, 2023, accessed 14 July 2023.

²⁴ Energy Institute, [Statistical Review of World Energy](#), Energy Institute, 2023, accessed 12 July 2023.

²⁵ Australian Bureau of Statistics (ABS), [Mineral and Petroleum Exploration](#), Australia, June 2023, accessed 15 September 2023.

²⁷ DISR, [Resources and Energy Quarterly June 2023](#).

Figure 6: Share of the world's top 5 LNG exporters/importers²⁷



Global natural gas use grew rapidly over the past decade, accounting for almost one-third of total energy demand growth.²⁸ The flexibility gas provides to transitioning energy systems is a key reason for this growth. The International Energy Agency (IEA) expects gas consumption to continue to grow across most of its scenarios, with sharp divergences post-2030 depending on several factors. These include the:

- rate of industrial heat decarbonisation
- rate of global decarbonisation
- role of natural gas in hydrogen production
- extent to which gas will play an enduring role in providing flexibility to power systems.

Australia is committed to working with its international partners to help them achieve their commitments to reach net zero by 2050.

The IEA models scenarios based on the pace with which economies progress towards net zero. The Net Zero Emissions by 2050 Scenario (NZE) is the most ambitious of IEA's three modelled scenarios. This normative scenario sets out a pathway to stabilise global average temperatures at 1.5° C above pre-industrial levels (with a 50% probability). The Announced Pledges Scenario (APS) is based on countries' announced ambitions of limiting emissions by 2030 and 2050. This scenario sees temperature rise of around 1.8° C (with a 50% probability). The Stated Policies Scenario (STEPS) looks at the actual policies that are in place, or under development, by governments globally. This scenario sees temperatures rise of around 2.5° C (with a 50% probability).²⁹

The IEA's Net Zero by 2050 (NZE) scenario predicts 3300 billion cubic meters (bcm) of natural gas will be required in 2030, and 1200 bcm in 2050 (see Figure 7).³⁰ In September 2023 the IEA revised these

²⁷ DISR, [Resources and Energy Quarterly June 2023](#).

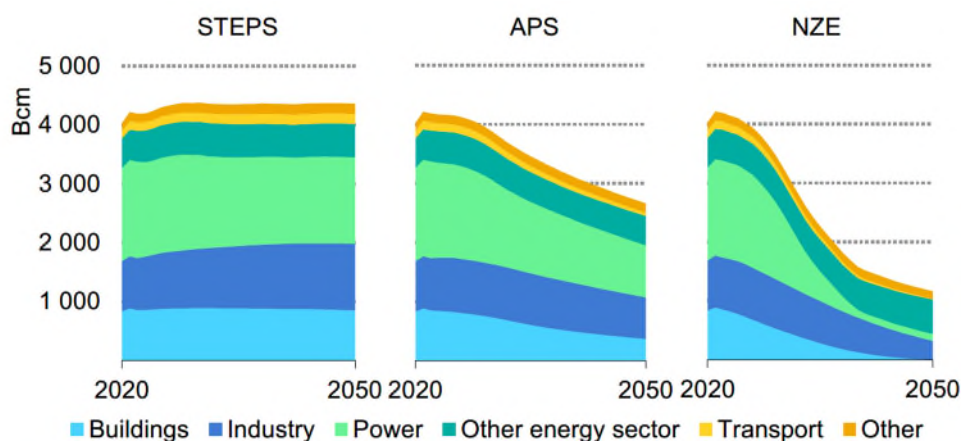
²⁸ International Energy Agency (IEA), [Natural Gas](#), IEA website, 11 July 2023, accessed 14 July 2023.

²⁹ IEA, [Energy and Climate Model](#), IEA website, October 2022, accessed 8 August 2023.

³⁰ The following conversion factor is used in the Resources and Energy Quarterly: Mt to PJ: 54.4, PJ to Mt: 0.018, Mt to Mcm: 1360. However, different publications can use slightly different conversion factors.

estimates to 3400 bcm in 2030 and 920 bcm in 2050.³¹ In the NZE scenario gas demand falls further and faster than the IEA’s STEPS and APS scenarios. In advanced economies, gas is expected to decline across all scenarios, due in large part to policies promoting clean energy and energy efficiency. These policies are expected to reduce overall gas demand and increase the efficiency of remaining gas use.

Figure 7: IEA’s natural gas demand by sector and scenarios (STEPS: stated policies, APS: announced pledges, NZE: Net Zero by 2050)³²



Producing gas in the NZE scenario will need investments of around US\$200 billion to maintain production from existing facilities and commissioned fields.³³ Despite flat or declining natural gas demand there is a need for ongoing investment to offset production decline from existing fields.

Ensuring this gas is produced and consumed in a way consistent with net zero by 2050 will require:

- carbon capture and storage (CCS)³⁴
- a substantial reduction in leaks, venting, flaring and fuel gas use
- efficiency, demand management and fuel switching/substitution.

Australia intends to maintain its reputation as a reliable investment partner as we build new partnerships in emerging energy industries like hydrogen and clean energy exports. These relationships are important to Australia’s national prosperity and security, and to our energy transformation.

Australia aims to maintain our position and reputation as a reliable energy supplier and grow our clean energy exports to meet our obligations under the Paris Agreement. We want to take advantage of our world class renewable resources to become a renewable energy superpower.

The gas market is increasingly globalised. The growth of LNG trade and a shift towards spot pricing in many markets has created greater interconnectivity between gas markets.³⁵ As seen following Russia’s illegal invasion of Ukraine, demand or supply shocks in one region have global implications for gas and electricity prices.

³¹ IEA, [Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach, 2023 Update](#), IEA, 2023, p. 76, accessed 27 September 2023.

³² IEA, [Outlooks for gas markets and investment 2023](#).

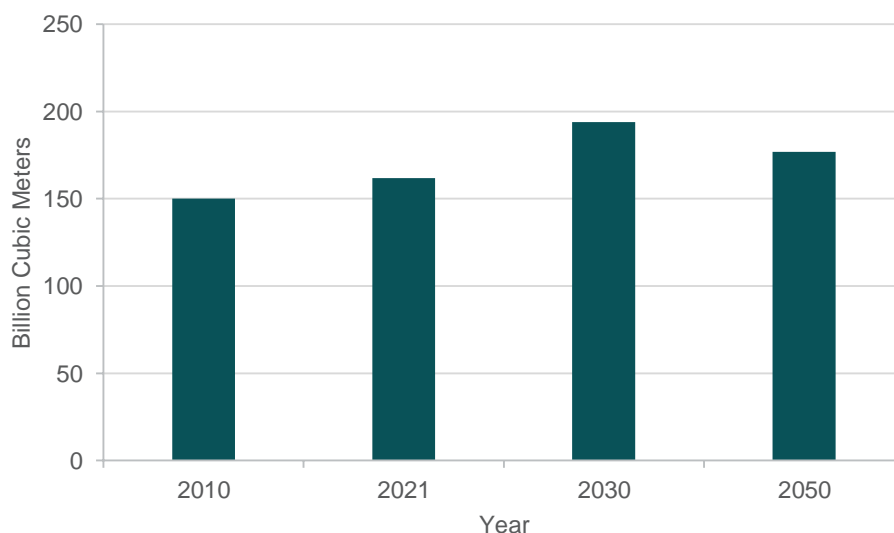
³³ IEA, [Outlooks for gas markets and investment](#), IEA, 2023, accessed 14 July 2023.

³⁴ IEA, [CCUS in the transition to net-zero emissions](#), IEA website, accessed 8 August 2023.

³⁵ Brookings Institution, [The Emerging Global Natural Gas Market](#), Brookings website, December 2021, accessed 3 August 2023.

Gas and energy demand growth will likely be strongest and most sustained in Asia.³⁶ Many Asian economies are driving domestic decarbonisation agendas. For example, by switching from coal to gas and supporting variable renewable (solar and wind) roll-out with gas-fired generation. These economies are making these changes simultaneously with strong energy demand growth. This means that in some cases, overall demand for gas may grow even as its share of an economy's energy mix shrinks (see Figure 8).

Figure 8: IEA' Southeast Asian Gas Demand (Announced Pledges Scenario)³⁷



We recognise that all countries will determine their own decarbonisation pathways to meet their individual circumstances and the imperative of addressing climate change.

Through the Future Gas Strategy, we want to better understand the role Australian LNG plays in our trade partners' energy transitions. This will help us better support our trade and investment partners and continue to make a positive contribution to global energy security. We want to work with our international partners to accelerate the global decarbonisation agenda, including by collaborating on decarbonisation technologies and initiatives.

Consultation questions

The Australian Government is interested in better understanding the role gas and LNG will play in the transition to net zero. It also wants to understand how the international community's commitment to net zero will impact the role of gas and LNG.

Use these questions to guide your input into the government's consultation process.

Producers

12. What do you see as the role of gas in Australia's net-zero transformation?
13. What action is your industry or company taking to reduce greenhouse gas emissions and does gas use have a role to play?
14. How can Australian LNG accelerate global decarbonisation without compromising energy security or affordability?

³⁶ DISR, [Resources and Energy Quarterly March 2023](#).

³⁷ IEA, [World Energy Outlook \(2022\)](#), IEA Website, Table 8.2, accessed 9 August 2023.

15. What measures will increase the transparency of LNG supply chains, including their environmental, social and governance impacts?
16. Does current gas transport and storage infrastructure support the changing role of gas in the residential and commercial sector? If inadequate, what is needed and who should provide the change?

Consumers (international)

17. What role will LNG – and Australian LNG in particular – play in your economy’s energy transition?
18. What is your economy’s current LNG demand and how do you predict this will change through to 2035 and beyond to 2050?
19. What options should the Australian Government consider to ensure international investment in Australian LNG projects remains competitive?
20. What value do you place on low or net zero emissions LNG production?

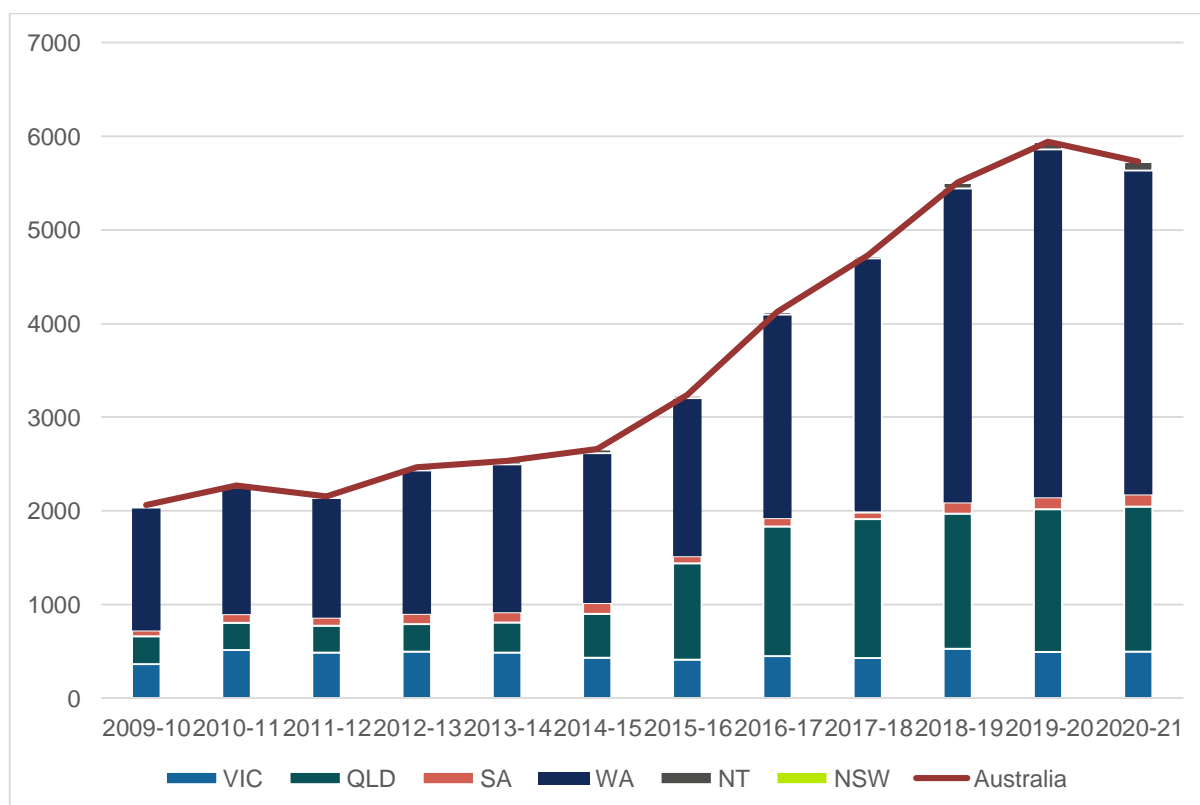
Chapter 2: Supply

Gas-producing regions and reserves

Australia produced 5,730 PJ of gas in 2020-21.³⁸ Around 70% of Australian gas is exported.

Australia produces all the gas it uses. Australia currently does not have the infrastructure to import LNG, although several import terminals have been proposed for the east coast. The gas market in Western Australia is not connected to the rest of the country (see also the ‘Gas transportation and infrastructure’ section). In 2020-21, most Australian gas production occurs off the north Western Australian coast, in southern Queensland and offshore Victoria (see Figure 9). In Western Australia, much of the supply is linked to LNG producing facilities but there is still some stand-alone production.

Figure 9: Gas production in petajoules by jurisdiction 2009-2010 to 2020-2021³⁹



The Northern Territory and South Australia also produce gas. Production in Commonwealth waters in offshore Victoria and Tasmania is now in decline after 50 years of production. The Australian Capital Territory does not currently produce gas. Meanwhile, New South Wales, which is currently a small producer of natural gas, only plans to develop gas resources around Narrabri in the Gunnedah Basin. Narrabri is expected to produce around 70PJ per year once fully operational.⁴⁰

³⁸ DCCEEW, [Australian Energy Update 2022](#).

³⁹ DCCEEW, [Australian Energy Update 2022](#).

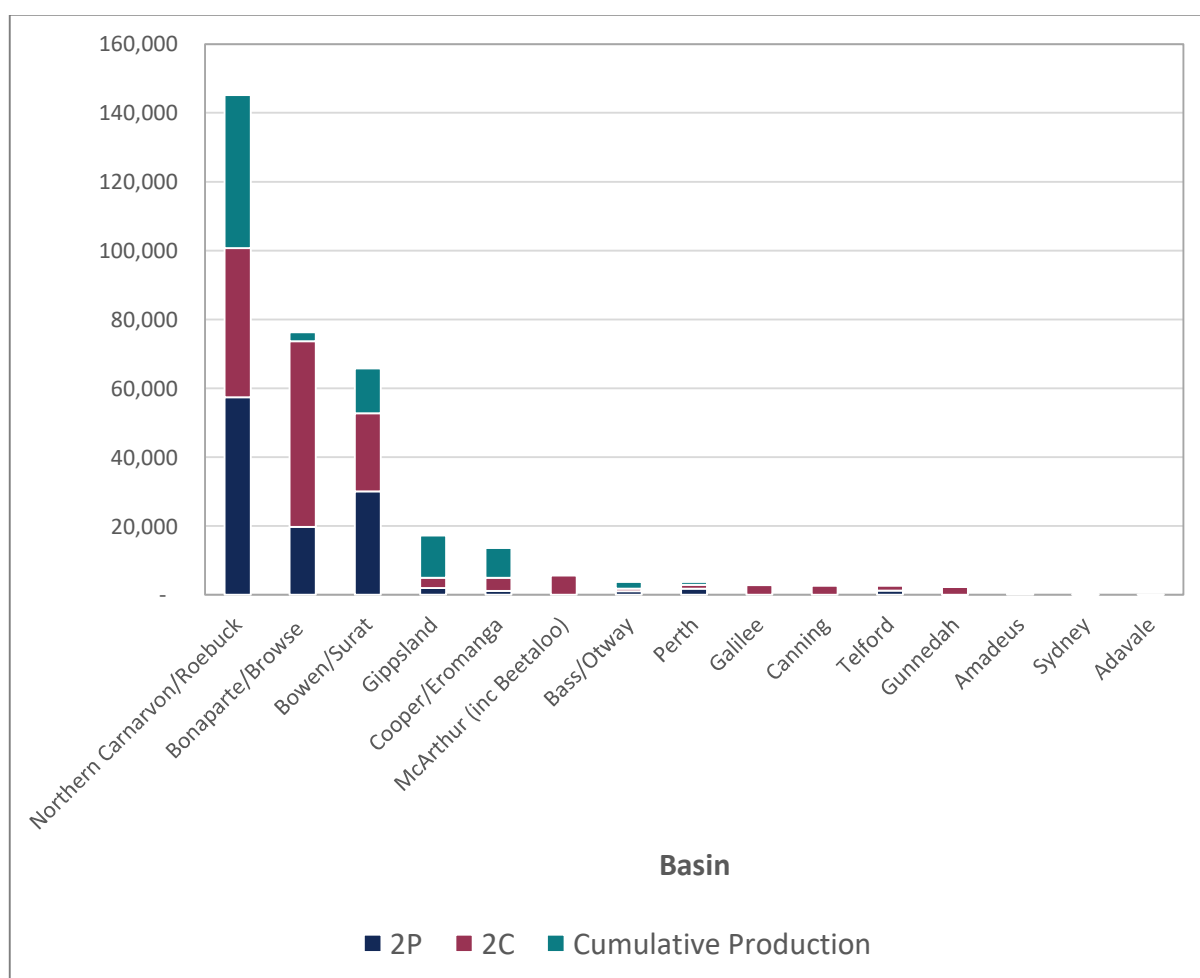
⁴⁰ Santos, [Narrabri Gas Project: Environmental Impact Statement](#), NSW Government Major Projects website, n.d., accessed 20 July 2023.

Australia’s gas reserves are located throughout the country. The largest remaining gas reserves are in Western Australia, Queensland and the Northern Territory (see Figure 10).

Factors influencing any future development of these reserves include:

- customer and investor preferences
- production costs
- access to existing infrastructure
- the emissions-intensity of the resource
- local social and environmental impacts and acceptance
- regulations applicable to the reserve (see also section on ‘Oil and gas regulation in Australia’).

Figure 10: Australia's Natural Gas Resources in petajoules, as at end 2021⁴¹



Cumulative production is the amount of gas that has been extracted from the basin to date. Australia’s gas resources are reported as the best estimate of reserves (2P) and the best estimate of contingent resources (2C) using the SPE-Petroleum Resources Management System⁴². Reserves represent that part of resources which are commercially recoverable. Contingent resources

⁴¹ GA, [Australia's Energy Commodity Resources, 2023 edition](#). Note: Total Demonstrated Resources are the sum of proven and probable reserves (2P) plus proven and probable contingent resources (2C); natural gas includes all conventional, unconventional and syngas resources; Telford Basin refers to in-situ coal gasification (syngas) at Leigh Creek in South Australia as reported by NeuRizer Ltd (2021).

⁴² Society of Petroleum Engineers, [Petroleum Resources Management System Guide for Non-Technical Users](#), accessed 19 September 2023.

represent the part of resources which are potentially recoverable but are not yet considered commercial due to technical challenges, profitability, or other factors. While Australia possesses substantial gas resources, not all these resources will be extracted.

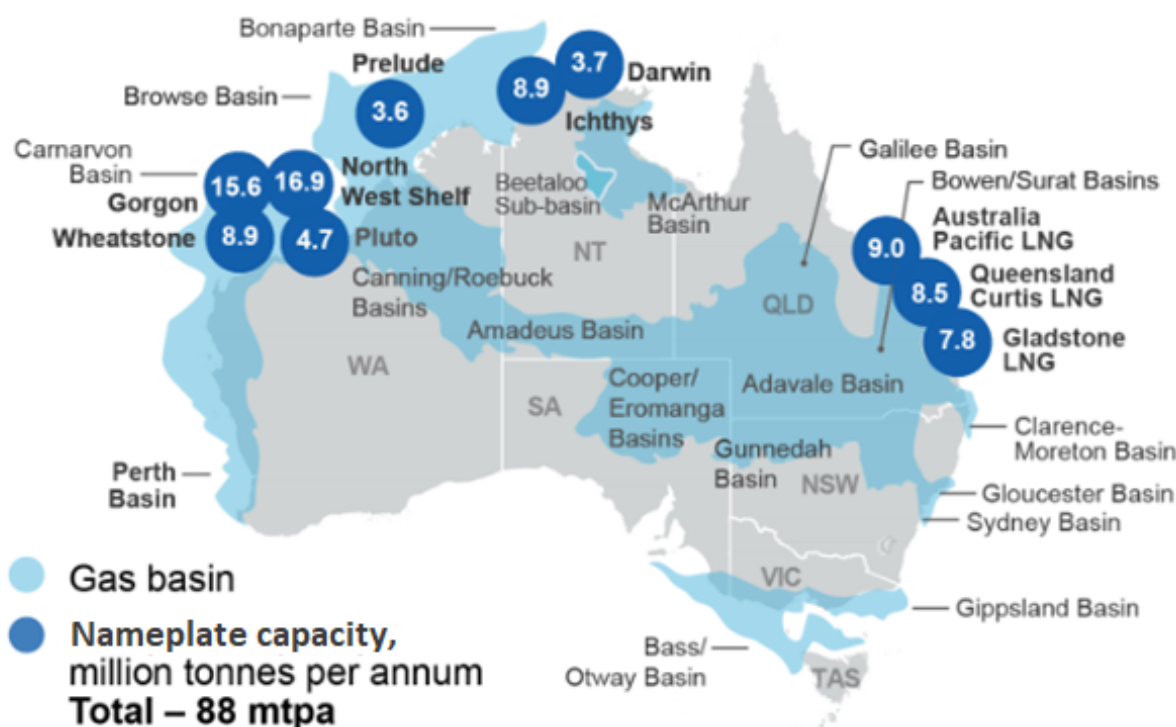
At current production rates, our identified reserves will be depleted in about 18 years. Responsible resource management is critical for securing a stable energy supply and fostering economic growth while aligning with Australia's emissions reduction targets.

Western Australia's LNG nameplate capacity is 49.9 million tonnes per annum (Mtpa) or 2,433 PJ across its 5 LNG projects. This represents 57% of Australia's total LNG capacity. Queensland has 25.3 Mtpa (1,233.6 PJ) across 3 LNG projects. The Northern Territory's 2 projects have a capacity of 12.6 Mtpa (614.3 PJ).

Australia's LNG recorded its highest export volumes in 2022, reaching 81.5 Mt (up 0.5% from 2021) valued at \$91 billion. The strong result was driven by record-high utilisation rates on Australia's west coast facilities. This was amid high international LNG demand, driven in large part by Russia's invasion of Ukraine. For example, Wheatstone, Gorgon, and Pluto LNG (one-third of Australia's total LNG capacity) are estimated to have operated at a combined utilisation rate of 110% in 2022.⁴³ (See Figure 11.)

LNG plants can operate above nameplate capacity for limited periods of time by, for example, deferring maintenance outages.

Figure 11: LNG projects and gas basins⁴⁴



⁴³ DISR, [Resources and Energy Quarterly June 2023](#).

⁴⁴ DISR, [Resources and Energy Quarterly June 2023](#).

Oil and gas regulation in Australia

Oil and gas activities are regulated by all levels of government with multiple government agencies in each state or territory playing a role. Australia is a federation of 6 states (New South Wales, Queensland, South Australia, Tasmania, Victoria, and Western Australia) and several territories.

State and territory governments primarily regulate the onshore production of oil and gas resources. These regulations cover the lifecycle of a project from tenement to site closure.

The Australian Government has regulatory responsibility for matters of national environmental significance and certain heritage matters under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). It supports respectful engagement in good faith with First Nations people to ensure that legislation takes their rights, interests, views, and knowledge into account. This legislation includes the *Native Title Act 1993* (Cth) and the *Aboriginal Land Rights (Northern Territory) Act 1976* (Cth).

The Australian Government regulates offshore oil and gas production in Commonwealth waters. Australia's Commonwealth offshore petroleum regime supports safe development of gas resources in response to domestic and international demand. An offshore titles system underpins the regime. It starts with an offshore acreage release.⁴⁵

When a titleholder discovers a resource, they either progress immediately to development through a production licence or apply for a retention lease while considering options for development. Many retention leases eventually move to production. Others are surrendered and can be released again through the acreage release process. The titles system aims to balance the need to ensure gas is brought to market in a timely fashion with the security of tenure projects need to attract investment.

We are currently reviewing the environmental management regime for offshore petroleum and greenhouse gas storage activities. Consultation processes are a focus of the review, especially with First Nations people.

Policies and regulation for domestic gas supply adequacy include the:

- Queensland Government's Australian Market Supply Condition
- Western Australian Government's Domestic Gas Policy
- Australian Government's Australian Domestic Gas Security Mechanism and Mandatory Gas Code of Conduct.

Regulation, particularly regulatory approvals processes, also seeks to protect the rights and interests of people and communities that gas development impacts. This includes Traditional Owners, landholders and local communities.

The Future Gas Strategy is exploring ways to ensure Australian gas is produced and consumed in a way that:

- minimises harm to local environments
- is consistent with achieving emission reduction goals
- respects the rights of Traditional Owners, landholders and local communities.

⁴⁵ For further information on offshore acreage release see DISR, [Offshore petroleum exploration acreage release process](#), DISR website, 2023, accessed 14 July 2023.

Consultation questions

Oil and gas regulations are an important part of achieving our transition to net zero by 2050. The Australian Government is interested in understanding the factors that will help us maintain a world-leading industry that will support our local and regional communities.

Use these questions to guide your input into the government's consultation process.

Producers

21. What is the role of offshore acreage releases in the context of consumer demand and emissions targets? What factors should the Australian Government consider when releasing acreage?
22. How could the offshore petroleum regime be improved to meet the objectives of the strategy?
23. What are the major barriers and opportunities for new supply? How can the Australian Government prioritise, mitigate or manage these?
24. What are some of the opportunities for gas production in Australia in the medium (to 2035) and long term (to 2050)? How could these necessary developments support decarbonisation consistent with achieving emissions reductions goals?

Community

25. How can the Australian Government better communicate and provide more transparency to local communities regarding gas projects?
26. What opportunities exist to improve engagement and consultation processes with industry?
27. How can all levels of governments better support the industry to engage with First Nations people and community groups?

Reducing emissions from Australian gas production

Australia is committed to reducing its greenhouse gas emissions to achieve its climate targets and address dangerous climate change.

The Australian Government will develop 6 sectoral decarbonisation plans, covering all major components of the Australian economy:

- electricity and energy
- industry
- the built environment
- agriculture and land
- transport
- resources.

These plans will be vital for attracting investment to decarbonise Australia's economy, including by giving industry and investors certainty.

The sectoral plans will inform Australia's national Net Zero 2050 plan and 2035 targets that Australia will lodge in keeping with our Paris commitments. The plans will maintain momentum on Australia's existing legislated emissions reductions targets of 43% reduction on 2005 levels by 2030 and net zero by 2050.

The Future Gas Strategy will closely align with the Australian Government's sectoral decarbonisation plans and other emission reduction policies such as the Safeguard Mechanism. Information we gather through this consultation process will inform several sectoral plans.

The Safeguard Mechanism covers facilities that emit more than 100,000 tonnes of CO₂ equivalent greenhouse gas in a year. It sets legislated targets, known as baselines, on the net greenhouse gas emissions of covered Safeguard facilities. Reforms to the Safeguard Mechanism came into effect on 1 July 2023. These reforms will reduce emissions at Australia's largest industrial facilities to net zero by 2050 and maintain their international competitiveness as the world decarbonises.

The Safeguard Mechanism reforms help give business the certainty to invest in the emissions reductions measures and technologies they need to compete in a decarbonising global economy. The reforms incentivise covered facilities to take advantage of cost-effective opportunities to reduce emissions, including emissions from natural gas. Emissions from natural gas contributed about a third of covered emissions from all facilities covered by the Safeguard Mechanism. Facilities can also improve energy efficiency and to reduce fugitive emissions.

Where facilities do not have viable opportunities to reduce emissions, they may surrender Safeguard Mechanism Credits or Australian Carbon Credit Units to reduce their net emissions. This ensures these facilities contribute to Australia's climate targets. It also allows them to meet their obligations at the lowest cost so they stay competitive in the transition to net zero.

Under the Safeguard Mechanism, baselines are production-adjusted. This means that they increase and decrease as a facility's production varies. This supports industry growth while providing a clear incentive to cut emissions.

Production variables are the production metrics which, combined with emissions intensity values, set each facility's baseline. There is a specific production variable for reservoir CO₂ from new gas fields that is used as an input for LNG.

The best practice emissions intensity for this production variable is zero due to:

- the existence of very low reservoir CO₂ fields
- the ability for companies to apply carbon capture and storage
- regulatory practice in Australia.

Baselines for new facilities, including continued investment in gas developments and large users of natural gas, are set at international best practice, adapted for Australian circumstances.

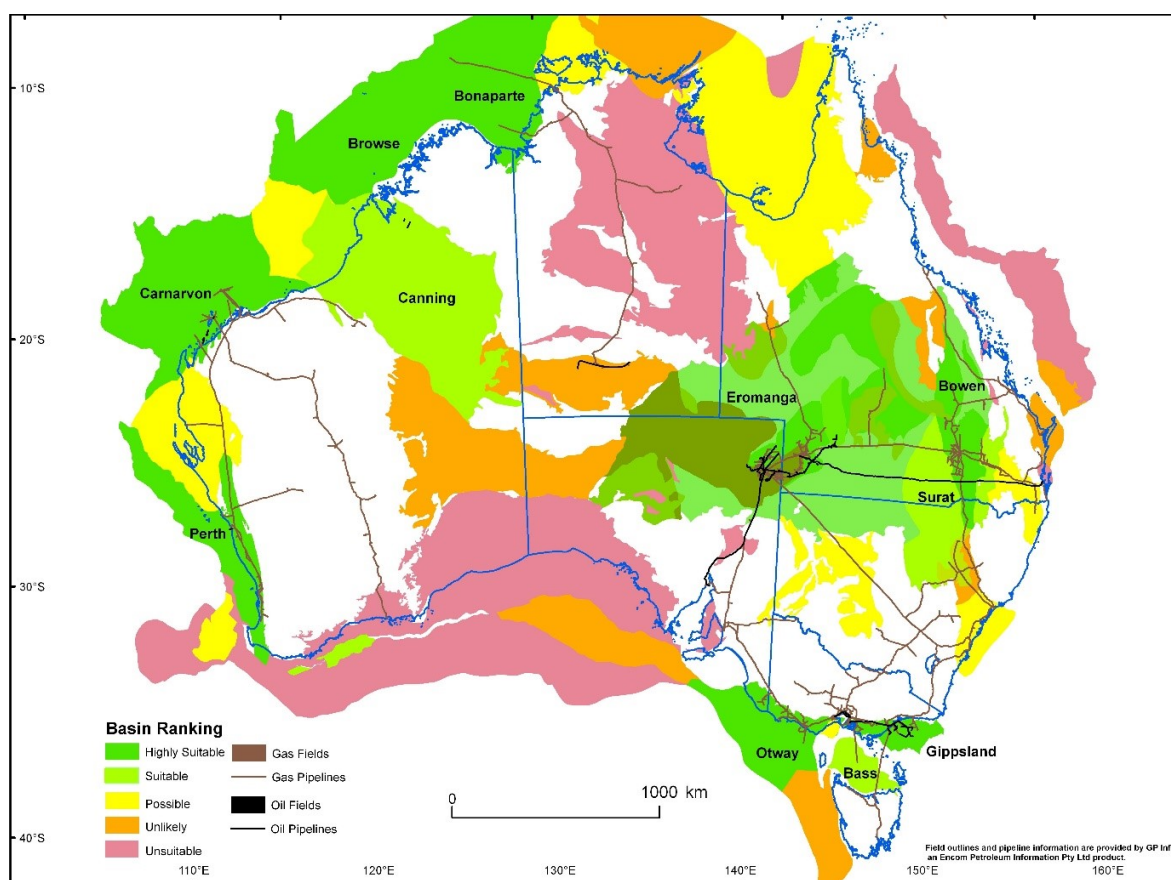
Geological storage of carbon dioxide

Carbon capture and storage (CCS) is the process of capturing and storing CO₂ from industrial and extractive processes.

It involves condensing CO₂ into a liquid and then transporting, injecting, and permanently storing the liquid CO₂ deep underground in a geological formation. Typically, it is stored at depths of more than 1 kilometre underground.

Australia has significant onshore and offshore storage reservoirs potentially suitable for CCS projects. This includes in depleted petroleum fields (see Figure 12). Successful deployment of CCS and negative emissions technologies (NETs) can help decarbonise oil and gas operations and other hard-to-abate industries.

Figure 12: Australia's basins ranked for CO₂ storage potential⁴⁶



There are commercial CCS projects in Australia and several projects are operating around the world. Australia currently hosts the world's largest commercial CCS project, the Chevron Australia Gorgon LNG Project at Barrow Island in Western Australia.^{47,48}

⁴⁶ See Figure 18 in Carbon Storage Taskforce, [National Carbon Mapping and Infrastructure Plan – Australia: Full Report](#), Department of Resources, Energy and Tourism, Commonwealth of Australia, 2009, accessed 14 July 2023.

⁴⁷ Chevron Australia, <https://australia.chevron.com/our-businesses/gorgon-project>, accessed 4 August 2023.

⁴⁸ Chevron Australia, <https://australia.chevron.com/news/2019/carbon-dioxide-injection>, accessed 4 August 2023.

Aside from the Gorgon Project, the Australian CCS industry continues to work towards large-scale commercial levels in Australia. To be successful, significant work is needed to identify geological storage sites and to develop infrastructure and processes. This will require substantial investment from the private sector and will involve extensive project timeframes.

Several Australian projects are in development, including:

- The CarbonNet Project, Victoria, seeks to develop a CO₂ collection hub with geological storage in the offshore part of the Gippsland Basin.
- The Moomba CCS project, South Australia, is a joint effort by Santos and Beach Energy. It aims to store 1.7 million tonnes of CO₂ each year. There is potential to eventually store 20 million tonnes of CO₂ per year across the Cooper and Eromanga basins.⁴⁹
- The South-West Hub Project, Western Australia, is investigating CO₂ storage in the Perth Basin.⁵⁰

Further projects are in scope after the Australian Government awarded 5 new greenhouse gas assessment permits offshore Western Australia and the Northern Territory in 2022. While still in the exploration phase, permit holders have shared plans to establish CCS hubs to help decarbonise local LNG production facilities. This would provide opportunities for hard to abate industrial sectors to meet their emissions reductions targets.

International interest in the transboundary movement (import and export) of CO₂ is also growing rapidly. A bill is currently before the Australian Parliament to consider a legislative amendment to permit this activity to occur in the future.⁵¹

Industry has continued to demand opportunities to explore for suitable offshore CCS project locations. There are 10 areas currently available for work-program bidding as part of the 2023 offshore greenhouse gas storage acreage release. Bidding will close on 28 November 2023.

The private sector is responsible for developing and delivering projects where it identifies that CCS is a cost-competitive, safe, and verifiable approach to meeting emissions reduction obligations under the reformed Safeguard Mechanism.

Offshore CCS projects are regulated under several pieces of legislation. These require significant consultation and approvals before any injection or storage activity starts.

The Australian Government committed \$12 million over the next 3 years in the recent budget to provide regulatory and administrative certainty for offshore CCS projects.

Onshore CCS projects are subject to relevant state or territory government regulations. Of the states and territories, only Victoria, Queensland and South Australia currently have specific legislation that governs CCS projects. The Western Australian Government is currently progressing a Greenhouse Gas Storage and Transport Bill to facilitate CCS projects in Western Australia.

⁴⁹SANTOS, <https://www.santos.com/sustainability/climate-change>, accessed 4 August 2023.

⁵⁰ Western Australian Government, <https://www.dmp.wa.gov.au/South-West-Hub-CCS-1489.aspx>, accessed 4 August 2023.

⁵¹ Parliament of Australia, Environment Protection (Sea Dumping) Amendment (Using New Technologies to Fight Climate Change) Bill 2023 (Cth).

Consultation questions

CCS will likely play an important role in helping the oil and gas and hard to abate industrial sectors to deliver their emissions obligations under the Safeguard Mechanism. The Australian Government is interested in better understanding the challenges in developing commercial projects.

Use these questions to guide your input into the government's consultation process.

Producers

28. How can Australia support the potential for cost-effective, safe and verifiable CCS projects, including for the gas sector, other industries and our region?

Community

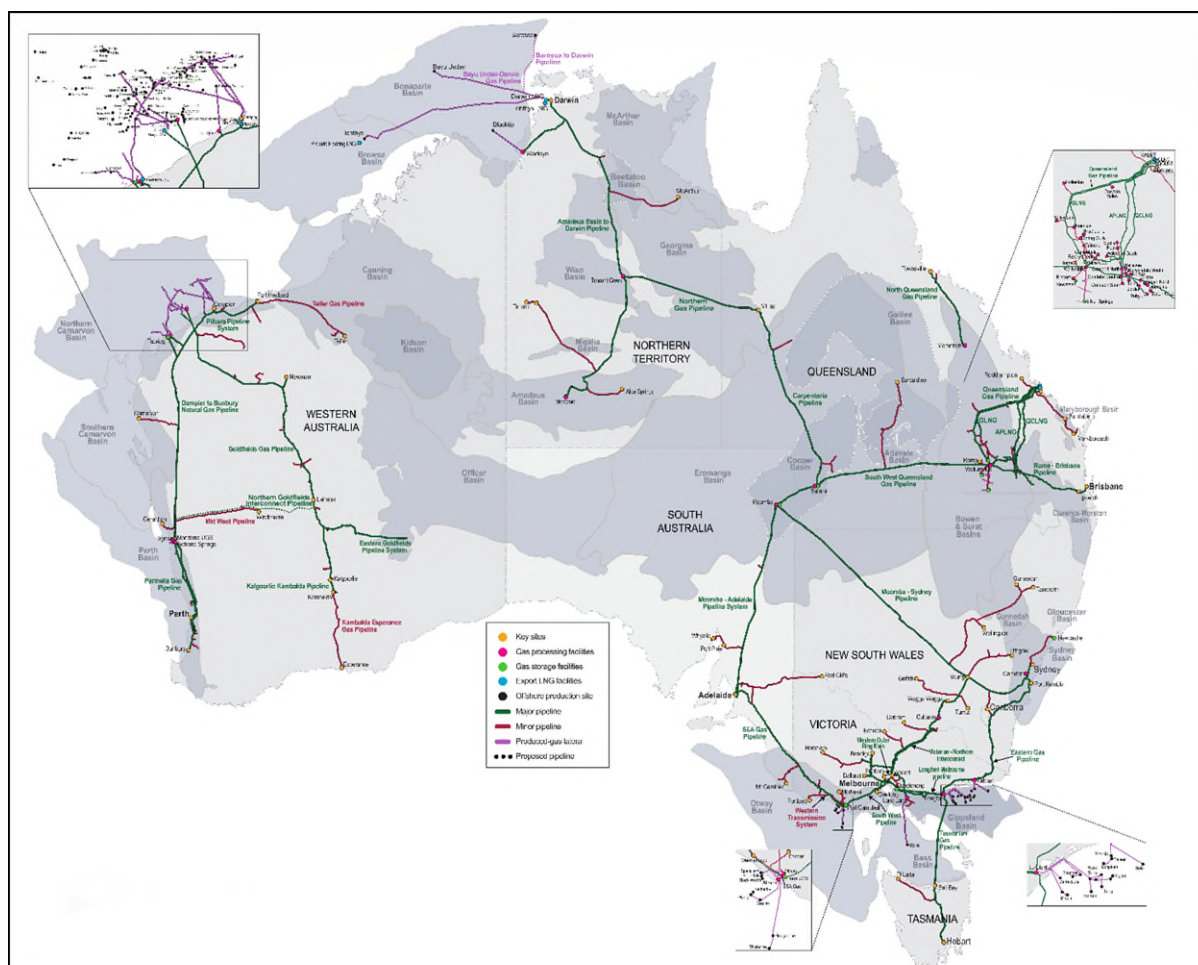
29. How can the Australian Government better communicate and provide more transparency to local communities regarding CCS projects?

Gas transportation and infrastructure

A network of transmission and distribution pipelines transport gas from gas processing facilities to users across the country. Pipelines link all states and territories in Australia, except Western Australia (see Figure 13).

Larger, high-pressure pipes transport gas over vast distances. Smaller, lower pressure pipes deliver gas to individual consumers. Gas pipelines are privately owned. The Australian Energy Regulator regulates pipelines in all jurisdictions except Western Australia, where the Economic Regulation Authority has this role.

Figure 13: Australia's gas networks⁵²



On the east coast, the gas transmission system was developed to transport gas from south to north. This is because a large proportion of the gas that Australians have used over the past fifty years was sourced from offshore gas fields in Victoria.

The current gas transmission infrastructure may not be suitable for gas needs in the future.

For example, the existing gas transmission network would need to be converted to transport pure hydrogen. In distribution networks, hydrogen can be supplied when blended with natural gas at low

⁵² About the Gas Bulletin Board (GBB), Australian Energy Market Operator, <https://aemo.com.au/energy-systems/gas/gas-bulletin-board-gbb/about-the-gas-bulletin-board-gbb>, accessed 13 July 2023. This map is intended to be a high-level representation only, and AEMO has made reasonable efforts to ensure the quality of the information but cannot guarantee its accuracy or completeness

levels of up to 10% by volume.⁵³ This marginally reduces the carbon intensity of the supplied gas. Blending hydrogen into natural gas networks is already happening in trials in Australia, Canada, Europe and Hawaii.⁵⁴ Changes to transmission and distribution networks to accommodate hydrogen or increased transport of gas from northern to southern states, could require new infrastructure.

LNG import terminals are an alternative to further investment in gas transmission and storage infrastructure. Uncertainty around LNG import terminals in Australia remains. This uncertainty reflects the technical and economic challenges, as well as projects receiving relevant regulatory approvals to develop these terminals.⁵⁵

Consultation questions

Transporting and storing gas, including natural gas, blended gas and renewable biomethane, close to demand centres will be increasingly important. The Australian Government is interested in understanding the role current and future infrastructure can play.

Use these questions to guide your input into the government's consultation process.

Distributors and LNG import terminal project proponents

30. How fit for purpose is Australia's gas transmission and distribution network?
31. What changes should be made to the transmission and distribution network to prepare for the changing profile of gas demand in Australia? What risks and opportunities would this entail?
32. Could the construction of LNG import terminals contribute to improving energy security in Australia?
33. Under what conditions would LNG import terminals be commercially viable in Australia?

⁵³ GPA Engineering 2019, Hydrogen in the Gas Distribution Networks <https://www.dcceew.gov.au/sites/default/files/documents/nhs-hydrogen-in-the-gas-distribution-networks-report-2019.pdf>, accessed 14 September 2022.

⁵⁴ [Western Australian Renewable Hydrogen Roadmap November 2020](#)

⁵⁵ See AEMO, [2023 Gas Statement of Opportunities](#), 59-67, accessed 7 July 2023.

Royalties and revenue

Gas production is a significant source of royalties and revenue for state, territory and Commonwealth governments. These royalties and revenue (taxes) fund government expenditure.

The amount of tax the Australian Government collects from oil and gas companies is strongly influenced by world energy prices, including the price of oil.

The Petroleum Resource Rent Tax (PRRT) applies to offshore oil and gas projects, including the North West Shelf project.⁵⁶ The PRRT applies at a rate of 40% to profits from the sale of marketable petroleum commodities, including oil, gas and condensate. In the latest Final Budget Outcome, PRRT receipts increased from \$897 million in 2020-21 to \$2.17 billion in 2021-22. This was because of increases in global oil and gas prices. The 2022-23 Budget revised accrual-based PRRT receipts up by \$350 million in 2022–23 to a peak of \$2.79 billion. These are forecast to collect \$6.49 billion over the 3 years to 2025-26. Implementing tax reforms will finalise the Australian Government’s comprehensive response to the Callaghan Review and the Gas Transfer Pricing (GTP) Review.

Onshore oil and gas projects pay royalties, which states and territories administer. States and territories do not always publicly report royalty revenue. Queensland, which does report its royalties, estimates it received \$2.3 billion in petroleum royalties in 2022-23.⁵⁷

LNG trade and investment flows contribute to Australia’s economic prosperity. Australia’s LNG export revenues are forecast to reach \$91 billion in 2022–23. This is around 20% of Australia’s resource and energy exports, and around 12% of Australia’s total exports.⁵⁸

⁵⁶ Production from the North West Shelf project pre-dates the 1989 introduction of the PRRT. As such, the project is also subject to a bespoke wellhead royalty regime. Western Australia receives approximately two thirds of North West Shelf royalty revenue, with the remainder flowing to the Commonwealth.

⁵⁷ Queensland Government, [Budget Strategy and Outlook 2023–24](#), Queensland Government, 2023, accessed 14 July 2023.

⁵⁸ DISR, [Resources and Energy Quarterly March 2023](#).

Australia's gas workforce and LNG facilities

Gas projects represent a major source of economic activity and create jobs in gas producing regions.

As of 2023, Australia's oil and gas extraction industry directly employs 20,900 people according to the Australian Bureau of Statistics.⁵⁹ Many more people work in Australia's broader gas industry (for example, services companies, gas retailers and pipeline companies) and in businesses highly dependent on gas (for example, chemicals plants and gas-fired generators).

Gas sector workers are often highly skilled, with skillsets ranging from:

- safety
- project management
- geology
- engineering
- mechanics
- community engagement
- regulatory approvals
- compliance.

Gas sector workers work in a high-hazard industry and often in remote locations. Australia has a robust regulatory regime that requires industry to protect workers from risks to their health and safety.

The geographic distribution of Australia's gas reserves roughly corresponds with the location of LNG facilities (see Figures 11 and 12). Once a gas field is developed, production peaks and then declines as the gas is extracted. Maintaining gas production requires ongoing investment and this creates continued economic activity and employment opportunities. This investment has diversified employment opportunities in gas producing regions, with other spill over benefits for the local economy.

For example, coal seam gas (CSG) production requires ongoing investment in drilling new wells and connecting those wells into the domestic market and to LNG facilities. The development of CSG in Queensland has created strong direct and indirect employment growth, though this growth typically tapers off after the construction phase.⁶⁰

Consultation questions

The role of gas will change through the energy transformation. The Australian Government is interested in national and local impacts from changes in the role of gas in the economy. This includes how Australia can continue to attract and maintain the skilled workforce to operate the gas industry across Australia and our regions.

Use these questions to guide your input into the government's consultation process.

⁵⁹ Australian Bureau of Statistics (ABS), [Labour Force, Australia, Detailed: Industry, Occupation, and Sector \[TableBuilder\]](#), ABS website, 2023, accessed 14 July 2023.

⁶⁰ Office of the Chief Economic Officer, Department of Industry, Innovation and Science, *Review of the socioeconomic impacts of coal seam gas in Queensland*, https://www.industry.gov.au/sites/default/files/June%202018/document/pdf/review_of_the_socioeconomic_impacts_of_coal_seam_gas_in_queensland.pdf, p. 27, accessed 17 August 2023.

Producers and LNG facilities

34. Are you able to attract and retain the workforce and skills you need? How will these shift as we transition to net zero emissions?
35. What are your long-term business and investment plans beyond 2035? How might these affect local economies, employment and communities?
36. Describe the projects or best practice examples of industry engagement with the local community, as well as the benefits these projects bring to the people and regional economy.

Community

37. How has the oil and gas industry impacted the local economy and employment opportunities in your region?
38. What actions will assist workforce retention, upskilling and mobility in your community as the economy transitions to net zero emissions?

Domestic gas supply

Gas fields deplete as gas is extracted. New sources of gas may be needed to maintain gas production to meet demand forecasts, including LNG supply to trading partners. This will depend on rates of electrification and substitution.

Our ability to meet supply forecasts depends on multiple factors, including changing demand and our capacity to produce, store and transmit gas. Without continued investment in new production, transmission and storage capacity or reduced gas demand, both the east and west coast markets could experience gas price and supply volatility.

Much of the gas that Australia produces is committed to customers overseas in the form of long-term supply contracts.⁶¹ These contracts have unlocked important new sources of gas supply for domestic and international customers. This has also meant that there is competition between domestic consumers and international customers for Australia's gas supply.

Most of Australia's gas production is located far from where most Australians live. This limits the ability to move gas from where it is produced to where it is consumed. New South Wales, the Australian Capital Territory, Tasmania, South Australia and Victoria are reliant on transport of gas to their markets. Their vulnerability arises from high demand, the forecast rapid decline of traditional supply from the Bass Strait and policies that discourage new local supply.

For the east coast market, gas demand is anticipated to follow a smoother downward trajectory than on the west coast (see Figure 15 and 16). Gas extraction and production costs are anticipated to increase over time, as deeper and more complicated fields undergo development.

A combination of these factors means that continued gas supply will be needed to meet our energy needs:

- at the right time
- in the right place
- at the lowest cost
- at the lowest emissions intensity
- with the least environmental impact.

The Mandatory Gas Code of Conduct was announced in December 2022 as part of the Australian Government's Energy Price Relief Package. It came into force on 11 July 2023.

The Code ensures that east coast gas users can contract for gas at reasonable prices and on reasonable terms. It is designed to:

- secure additional supply commitments to anchor prices at \$12/GJ
- provide certainty to investors in new supply to avoid projected shortfalls
- sustain reasonable domestic gas prices over the medium term.

The Australian Domestic Gas Security Mechanism (ADGSM) ensures there is sufficient natural gas supply to meet the forecast needs of Australian energy users. The ADGSM gives the Australian Government's Minister for Resources the power to control the export of LNG if a domestic gas shortfall is forecast. It remains a measure of last resort to protect Australia's domestic energy security.

⁶¹ ACCC, *Executive Minute to Minister for Resources and Northern Australia*, Minute No. 12/2022, June 2022

Figure 15: Gas supply is forecast to decline on the east coast of Australia⁶²

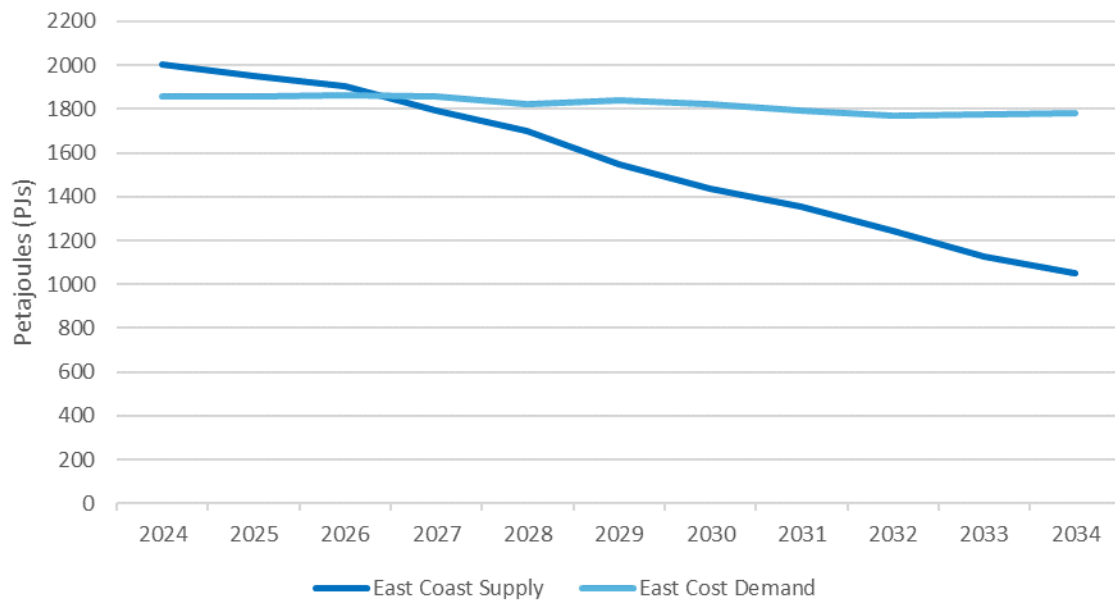
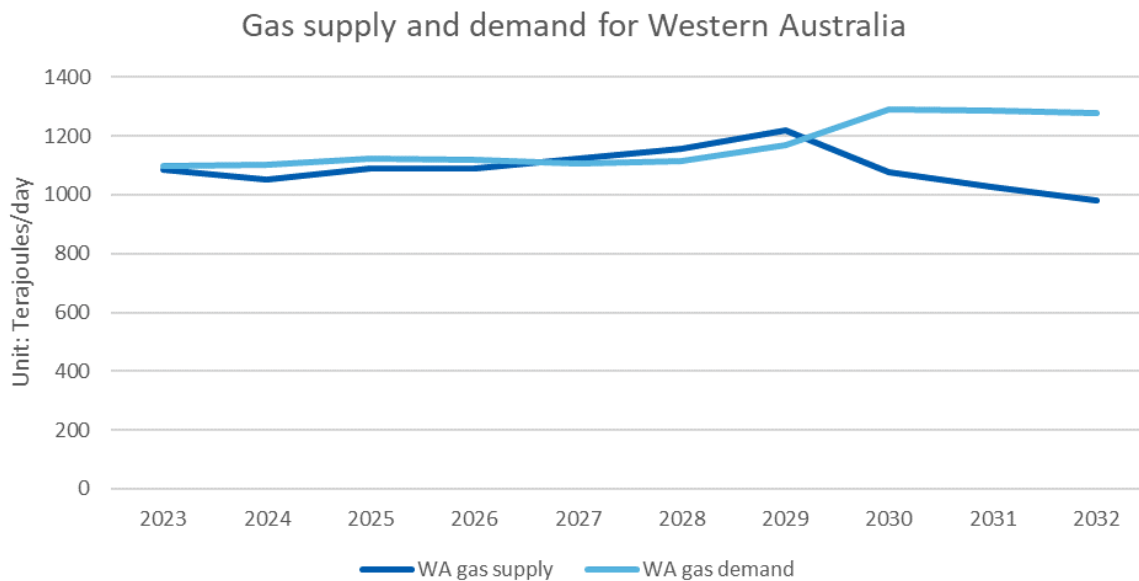


Figure 16: Gas supply is also forecast to decline on the west coast of Australia⁶³



⁶² This figure was developed by combining supply data from Chart 5.2 from the Australian Competition and Consumer Commission (ACCC), [Gas inquiry January 2023 interim report](#), Commonwealth of Australia, 2023, and demand forecast data from Figure 7 in AEMO’s [2023 Gas Statement of Opportunities](#). Demand and supply forecasts can be influenced by various factors, including the influence of measures like the Heads of Agreement, in which LNG exporters on the east coast of Australia agreed that uncontracted gas be first offered with reasonable notice on competitive market terms to the Australian domestic market before being offered to the international market as LNG spot cargoes. The supply data does not account for continued investment in developing supply and contingent (2C) resources.

⁶³ This is drawn from Figure 1 in AEMO’s [2022 Western Australia Gas Statement of Opportunities](#), accessed 19 July 2023. The forecasts in this figure, as above, do not account for the development of contingent resources.

Consultation questions

We need to balance supply and demand as the economy transitions to net zero. This involves balancing domestic gas security with affordability and sustainability. The Australian Government is interested in better understanding the risks to Australia's gas security and how to mitigate them. It is also interested in ways to improve affordability of gas while also decarbonising gas supply chains.

Use these questions to guide your input into the government's consultation process.

Consumers (domestic)

39. What are the risks to Australia's domestic gas security in the medium (to 2035) to long term (to 2050) for your industry and how can these be addressed?
40. What do you see as the biggest risk to the ongoing affordability of Australia's domestic gas supply? For example, what are risks to affordability in the wholesale or retail market?
41. What reforms can be made at a Commonwealth, state, territory, or industry level to allow gas supply to be more responsive to domestic demand signals?
42. What actions are available to lower gas costs, including substitution and new supply, to provide certainty to consumers? How would these actions further the Australian Government's decarbonisation goals?
43. What opportunities exist in your industry to decarbonise supply chains?
44. Do you use any forecasts of gas supply to inform your outlook of the gas market? If so, what are they?
You may also wish to consider whether these forecast scenarios consider the technical and commercial uncertainties associated with gas reserves and resources. Which scenarios do you consider best reflect the supply outlook?
45. Are there any limitations or caveats associated with these scenarios? How do you address these limitations?

Conclusion

Gas plays a critical role in Australia's economy. It is a significant export commodity ensuring regional energy security. It also underpins Australian jobs, investment and economic growth.

Having enshrined our net-zero 2050 commitments in law, Australia's decarbonisation goal will need to be met while maintaining our nation's energy security. In this context, Australia requires a clear long-term strategy to help governments, industries, communities and households make decisions.

Your input on this consultation paper provides crucial information in developing the government's Future Gas Strategy. This will provide a medium-term (to 2035) and long-term (to 2050) plan for gas production, consumption and substitution in Australia. Your responses to our questions will help us identify:

- the variety and quantity of uses for gas in Australia's economy
- how gas can be optimised or substituted across the value chain
- ways to reduce production emissions
- ways to ensure adequate Australian gas production to meet demand
- what actions will ensure Australia achieves our net-zero targets while remaining a reliable supplier of gas
- how we ensure Australian businesses, communities and households benefit from our gas sector.

Submit your feedback on our consultation hub:

<https://consult.industry.gov.au/future-gas-strategy>